September 29, 1958

Paper Trade Journal

All Aspects of Mechanical Pulp Manufacture Discussed in Detail at International Meeting

Report on Operation of One of the Largest Wet Bottom Precipitators

Paper Machine Suction Transfer Systems and Felt Requirements and Operation

1

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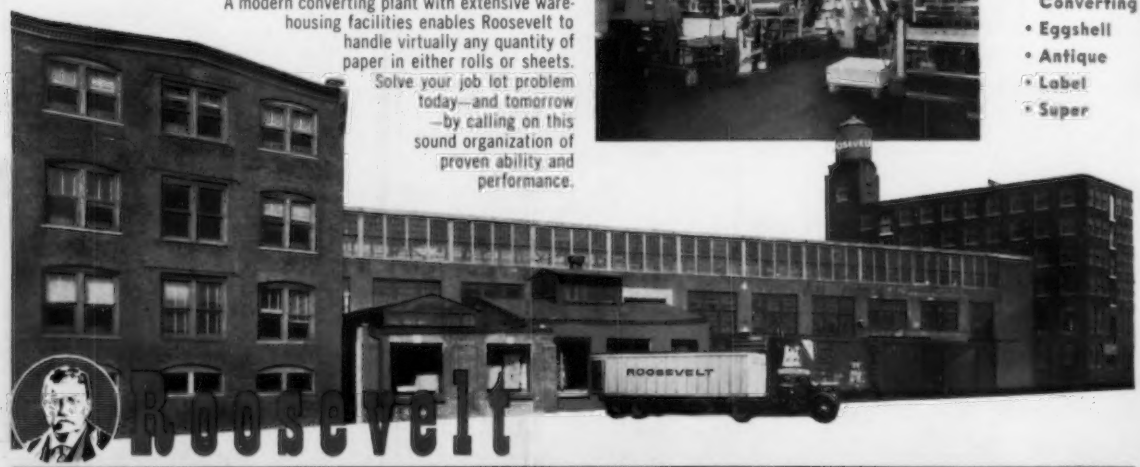

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JOHNSON JOINTS
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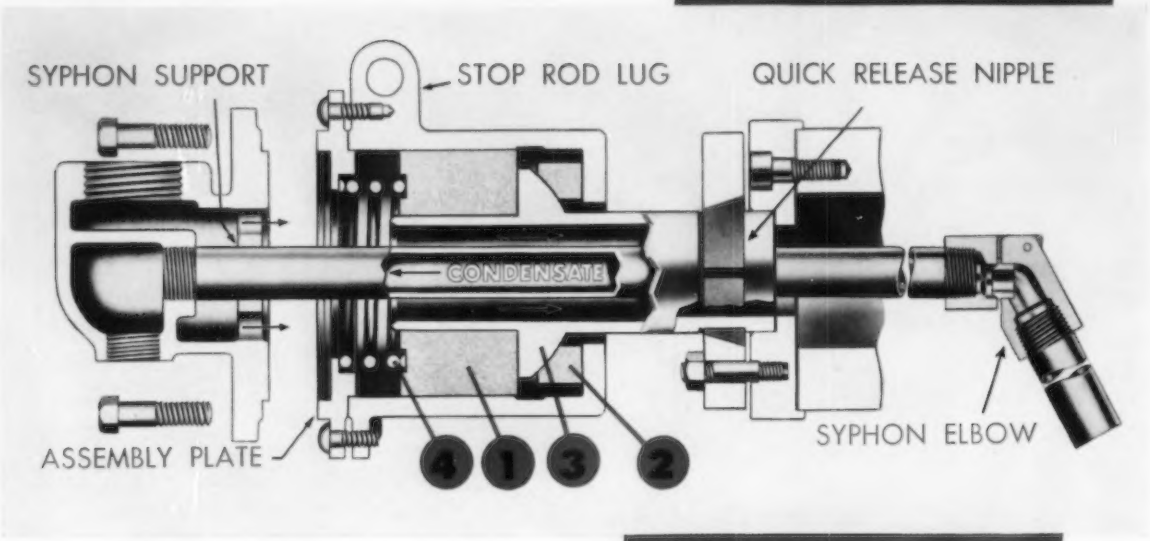
"quick release nipple"
and Johnson Syphon Elbow



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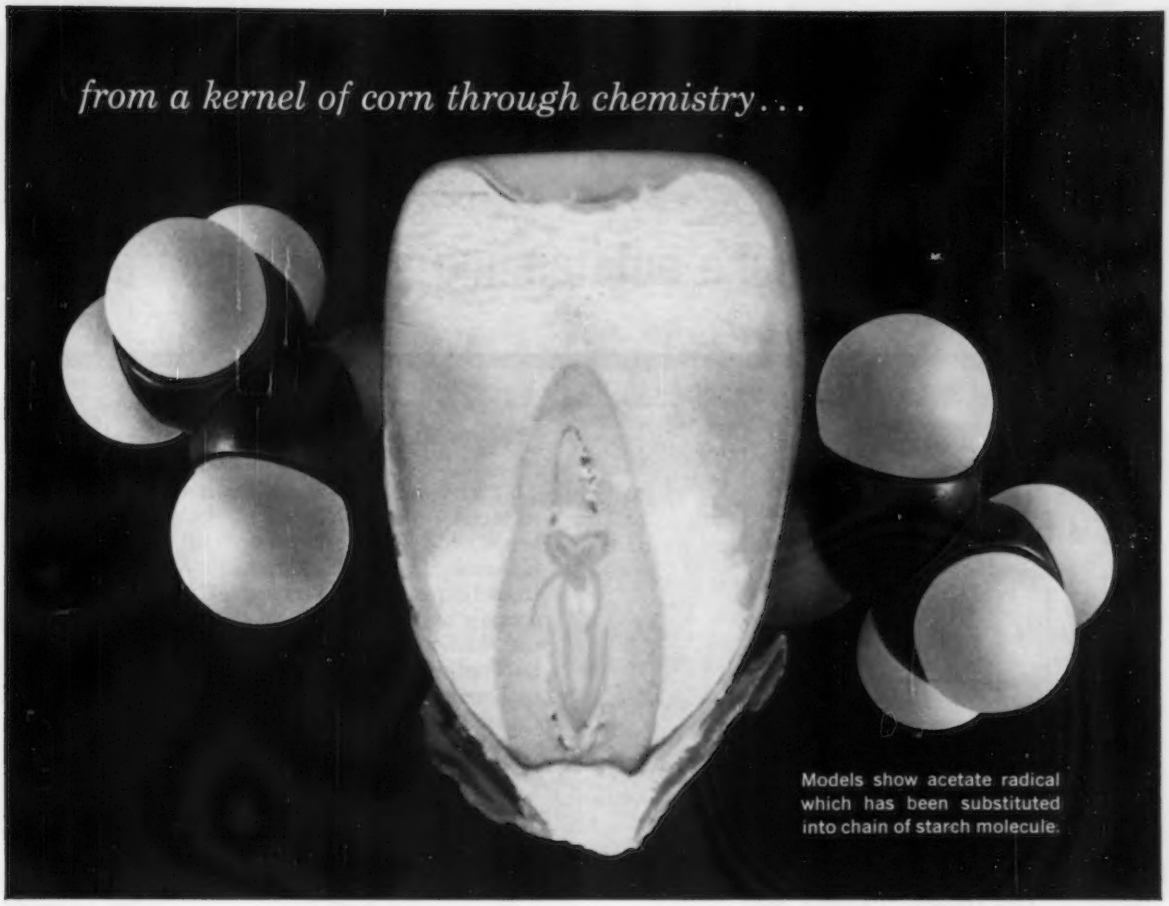
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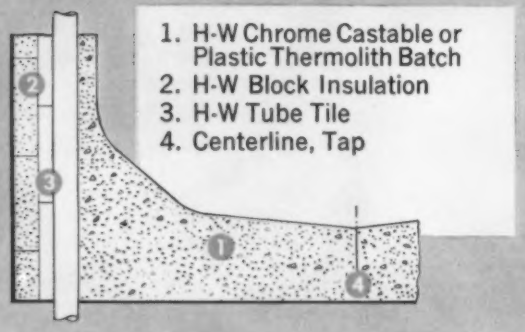

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At many mills it is considered the best refractory yet developed for bottoms and lower side walls of paper mill recovery furnaces. It has high density and is extremely resistant to chemical attack and erosion by the molten smelt. It is easy to use without special experience, and may be applied by air-placement guns and by casting both for complete installations and for maintenance patching.

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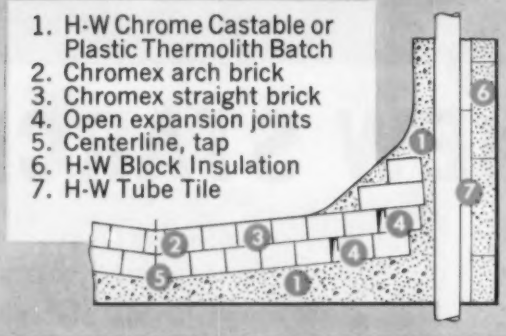
This leading plastic chrome ore refractory is a ramming mixture which becomes hard, dense and highly impervious to the molten salts, upon air drying. For the monolithic lined parts of recovery furnaces, it provides the high, all-temperature strength and resistance to chemical corrosion, required for long dependable service.

BRICK AND MONOLITHIC CONSTRUCTION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Paper Trade Journal

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REMEMBER THESE DATES

Oct. 7-8: Fibre Box Assn., Waldorf-Astoria Hotel, New York City.

Oct. 9-10: Fibre Drum Mfgrs. Assn., Drake Hotel, Chicago.

Oct. 9-10: TAPPI Deinking Conference, Dayton-Biltmore Hotel, Dayton, Ohio.

Oct. 20-22: TAPPI Paper-Plastics Conference, Kimball Hotel, Springfield, Mass.

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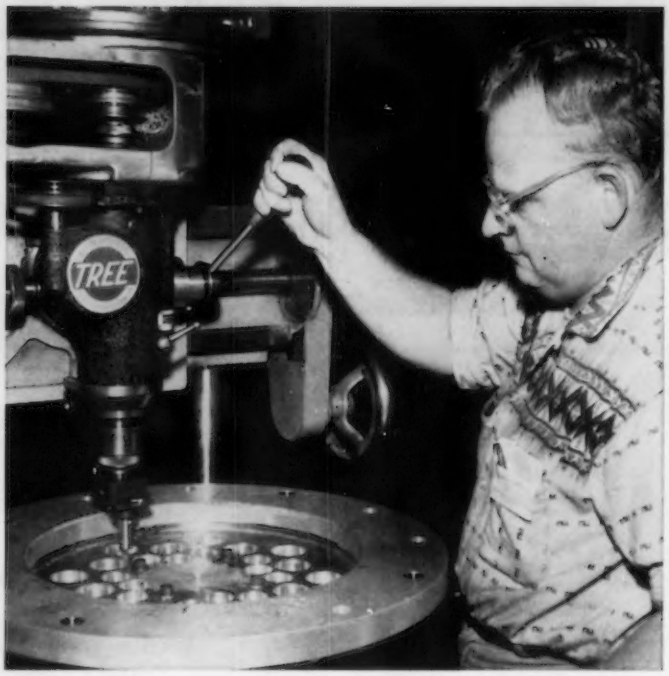

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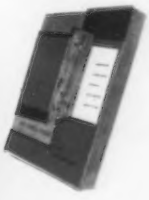

An important new reason to turn to Corn Products for your starch needs

New continuous cooker makes starch coating easier

Here is a new way for paper makers to achieve uniformity in starching operations: start with the grade of Corn Products starch best-suited to your type of operation—and use our newly-developed continuous starch cooker. This new cooker permits a uniformly cooked starch to be introduced at a predetermined rate to the wet end of the paper machine. On enamel papers, one well-known manufacturer* noted the following improvements: increased bursting strength and folding endurance, improved wax pick resistance, reduced two-sidedness of the base sheet, better furnish retention on the wire, reduced fuzz in the coating base stock.

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*name upon request; a reprint describing this installation is also available

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On the West Coast: HUNTINGTON RUBBER MILLS, INC., Seattle 88, Washington

Board Sets New Weekly Record

A weekly record for paperboard tonnage is believed to have been made for the week ending September 20. Preliminary figures from the National Paperboard Assn. indicate that 305,978 tons were produced in that week. Operating rates for the middle two weeks of September (we are ignoring the first week because of the misleading effect of Labor Day) were about 91% for the paper mills and 96% for the board mills.

General Business—No Clouds Visible

Close examination of general business indicators and indexes shows nothing but good news, in varying degrees. There can be no doubt that we are rapidly moving out of the recession. The only cause for concern at this time is the over-optimistic state of the stock market.

Pulp Prices "Officially" Unchanged

As predicted earlier no official price changes will be made for the fourth quarter in spite of improved demand. "Unofficially" prices will be increased by the fact that the quantity of "off quality or substandard" pulp sold will undoubtedly be reduced. If board mill production continues at its present rate combined with greater activity by the paper mills during the rest of the year the resulting increased demand may make pulp price increases possible for the first quarter of 1959.

Waste Paper Market Stabilizing

The waste paper market has stabilized somewhat after the confusion of the first two weeks of September. An indication of the extent of the upheaval is shown by the fact that waste paper prices in the Chicago area were actually increased in the *middle* of the month. Prices have stabilized somewhat above their long depressed level. Waste paper dealers are watching mill demand carefully with the hope that further increases may soon be possible.

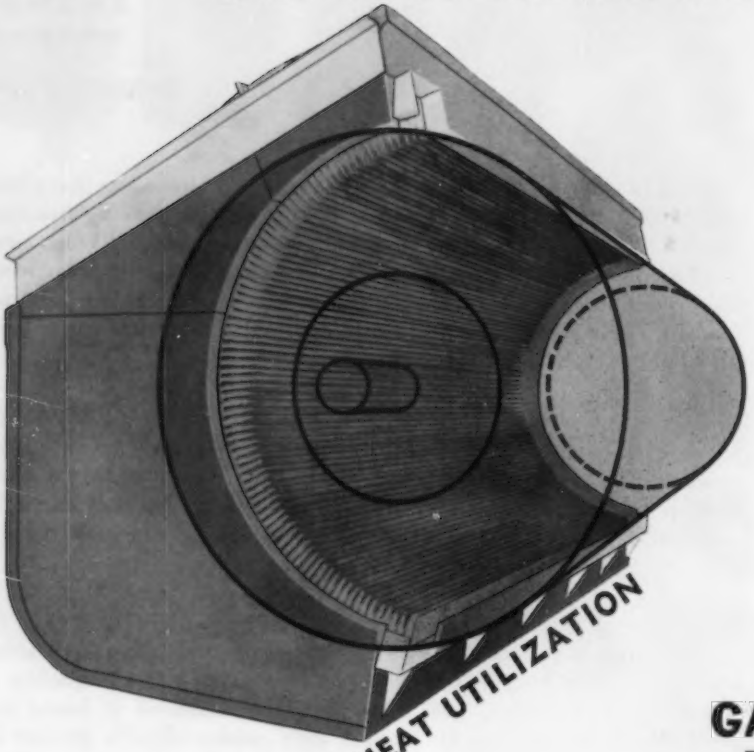
Price Increases—Board Could Be, Paper NO!

High level of activity of board mills, reflecting greatly increased demand for paperboard, may result in some price increases within a few months. Prices have been virtually unchanged for over two years while manufacturing costs have increased on every side. Outlook for paper price increases is considerably less due to the fact that demand for it has failed to accelerate at nearly the same rate as board demand, although paper manufacturers are equally pressed by rising costs.

Groundwood Production Receiving Due Attention

Groundwood, a long neglected papermaking fiber, has received increased attention in recent years. This could be said to have culminated in the recent International Pulping Conference, which is reported in depth in this issue. This conference is undoubtedly the best convention dealing with pulp and paper production ever attended by the editor.

OVER **600%** INCREASE IN DRYING RATES*



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The Gardner Dryer - - gives highest heat utilization efficiency and top drying rates through higher air velocity and controlled turbulence.

and . . . there's no damaging effect to the sheet, whether coated or uncoated.

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Paper Machinery Builders Since 1837

Paper Trade Journal | WEEK OF SEPTEMBER 29, 1958

New Mill for Sweden

A major expansion program has been announced for Statens Skogsindustrier, the state-owned Swedish forest industry organization. The plans include a new kraft pulp mill and a paper mill at Pitea with an annual production of 110,000 tons as well as enlargement of its kraft pulp mill at Karlsborgsverken so as to produce 60,000 more tons of pulp per year there.

Statens Skogsindustrier which was formed in 1941 operates plants in ten locations, including not only pulp, paper and wallboard but also timber, mineral wool, steel shot and steel grit.

The new mill at Pitea will make about 80,000 tons of kraft pulp and about 30,000 tons of semichemical pulp from birch. The total pulp output will be used in the new paper mill. The additional pulp produced at Karlsborgsverken will be made into paper there.

Newspaper Outlook

Edward W. Barrett, writing in "Newsprint Facts" makes the following predictions on the future of American newspapers:

1—The trend toward consolidation of newspapers in the average city will continue, spurred by rising costs of production.

2—Total newspaper circulation will continue to increase, as will the total number of newspaper pages printed. The reason is simple: Growing population and the constantly rising education level.

3—With few exceptions, the large newspapers will become better edited, more objective, and better balanced. While the disappearance of competition among newspapers in any city is discouraging in many ways, it will also produce benefits.

4—The newspaper profession will concentrate increasingly on developing ways to make the major news understandable.

5—It is far from certain, but we may see the start of a substantially increased number of smaller specialized papers in new suburbs and in other subdivisions of large newspaper areas.

Mr. Barrett is Dean of the Graduate School of Journalism, Columbia University.

Johns-Manville L-O-F Glass Fibers Merger Proposed

Johns-Manville Corp. has proposed a merger with L-O-F Glass Fibers Co., Toledo, Ohio, on the basis of one share of its common stock for 2½ shares of L-O-F Glass Fibers common stock. The proposal was announced by Adrain R. Fisher, chairman and president of Johns-Manville, G. P. McNichols, Jr., chairman, and R. H. Barnard, president of the glass fiber concern. L-O-F Glass is controlled by Libbey-Owens-Ford Glass Co.

The proposal would involve the exchange of over $47.6 million of Johns-Manville common stock, based on current prices of the shares on the New York Stock Exchange.

L-O-F Glass Fibers was formed in November, 1954, to acquire the net assets and business of the Fiber Glass and Corruluz divisions of Libbey-Owens-Ford Glass Co., Toledo. It merged with Glass Fibers, Inc., in March, 1955. It produces fibrous glass materials in a wide variety of forms from matting to filament yarns.

Johns-Manville who are basically building materials manufacturers, operate five separate plants throughout the United States and two in Canada, at which pulp, paper and board are made.

Paper and Board Production

According to the American Paper and Pulp Assn., the ratio of the United States production to mill capacity for the week ending September 13, 1958, was 91.6 per cent compared with 70.1 per cent revised for the preceding week. The ratio was 91.5 per cent for the corresponding week a year ago.

The paperboard production ratio for the week ending September 13, 1958, was 97 per cent compared with 73 per cent for the preceding week and 98 per cent for the corresponding week last year.

(Detailed statistics on page 44.)

The rumor that Beloit Iron Works has acquired E. D. Jones & Sons of Pittsfield, Mass., was widely circulated at the Alkaline Pulping Conference last week. We were unable to obtain a confirmation or denial at press time.

Newsprint Production Off but Consumption Up

Production of newsprint in North America during August, 1958 amounted to 659,498 tons and was 8.0 per cent under the August, 1957 volume. Shipments totaled 633,974 tons in August, 1958 and were 6.5 per cent below shipments in the corresponding month of 1957. According to the Newsprint Service Bureau, output in the United States was 148,523 tons and shipments were 142,032 tons and respective decreases from August, 1957 amounted to 5.1 per cent and 7.6 per cent. Canadian production amounted to 510,975 tons while shipments totaled 491,942 tons. Declines from the year ago levels were 8.8 and 6.1 per cent respectively.

Production of newsprint paper in North America through the end of August, 1958 amounted to 5,234,882 tons which was 452,438 tons or 8.0 per cent below the historical high attained in the same period of 1957. United States mills produced 1,168,552 tons or 97,702 tons and 7.7 per cent less than in the first eight months of 1957. Output in Canada amounted to 4,066,330 tons and was 354,736 tons or 8.0 per cent under the volume produced in the first eight months of 1957.

U. S. newsprint consumption for August 1958 increased over August 1957, the first monthly increase in 14 months. In August newspapers reporting to American Newspaper Publishers Association consumed 387,560 tons. This was 0.3 per cent over the 386,351 tons consumed in August, 1957 and 3.7 per cent under the 402,493 tons used in August, 1956.

ANPA reporting newspapers consumed 3,207,549 tons of newsprint in first eight months 1958, a reduction of 4.5 per cent under the 3,360,108 tons consumed in first eight months 1957, and 5.3 per cent under the 3,385,648 tons used in corresponding period 1956.

Gerald A. Castonguay

A. B. Truman

Dryden Appoints Mill Supt.

Gerald A. Castonguay has been appointed paper mill superintendent by Dryden Paper Co.

J. D. Nicholson is retiring for health reasons but will remain in the capacity of paper mill consultant for an indefinite period.

Mr. Castonguay was assistant paper mill superintendent with an Eastern Canadian mill before this appointment.

Transfers to Anglo Paper Products

A. B. Truman who joined the control department of Anglo-Canadian Pulp and Paper Mills eighteen months ago, after having worked for Wiggins Teape Group Research Organization, has now transferred to Anglo Paper Products, Ltd., the research and development organization for Anglo-Canadian Pulp and Paper Mills Ltd. and Anglo-Newfoundland Development Co.

Frohman Resigns as H & D President

West Virginia Pulp and Paper Co. announces that it has accepted with great reluctance the resignation of Charles E. Frohman as president of the Hinde & Dauch Division of the company.

Mr. Frohman advised the board of directors that his doctors had strongly recommended that he relinquish the direction of the 15-plant corrugated box manufacturing operation. At his request, Mr. Frohman's resignation will be effective October 31, which marks the end of the company's fiscal year.

As an interim arrangement, the board appointed David L. Luke, president of West Virginia, to act as chief executive officer of the H&D Division until a permanent arrangement can be made.

Champion Creates New Customer Service Post

Champion Paper and Fibre Co., Hamilton, Ohio, has created a new position of technical director, customer services, and appointed Ronald I. Drake to the post.

Mr. Drake has been manager of technical printing service in the sales division since 1949. In his new job he will serve as the principal technical assistant and advisor to John W. Zimmerman, vice president, customer services.

Transfers Announced by Crown Zellerbach

Crown Zellerbach has made the following transfers and promotions:

Leland F. Maybach, St. Francisville project engineer, central engineering, Seattle—to plant engineer, St. Francisville mill.

Charles J. Mayeux, Gaylord assistant master mechanic, Bogalusa mill—to master mechanic, St. Francisville mill.

Kenneth Thompson, paper mill day foreman, West Linn mill—to paper mill superintendent, St. Francisville mill.

Richard W. Loyst, purchasing supervisor, Lebanon mill—to purchasing supervisor, St. Francisville mill.

Both Mr. Maybach and Mr. Loyst have been working at the St. Francisville mill during its construction.

Andrew W. Erickson, St. Francisville construction staff, central engineering, Seattle—to production planning supervisor, St. Francisville mill.

Costello to Head Abitibi Panelboard

Abitibi Power & Paper Co. Ltd. and Abitibi Sales Co. Ltd. have announced the establishment of a Panelboard Division, and appointed R. E. Costello as general manager.

Mr. Costello has also been appointed to the management committee of Abitibi Power & Paper Co. and will be responsible for the entire operation of the Panelboard Division, including distribution of the products. He was formerly manager of manufacturing (pulp & board).

Otis Div. Names Assistant Manager

Allan B. Copping has been appointed assistant manager of the Otis Division, International Paper Co.

Mr. Copping has been with the International 35 years. He has worked at the Corner Brook, Newfoundland mill as a sulphite superintendent, in Glens Falls as assistant director of research, at Otis as a technical superintendent and for the past twelve years as assistant manager at the Hudson River Mill.

Changes in St. Regis Pulp Department

St. Regis Paper Co. has made the following appointments and changes in its pulp department:

William M. McNair, U.S. pulp sales manager; A. T. Hussey, eastern pulp sales representative, New York; Ralph W. Wehmhoff, midwestern pulp sales representative, Chicago.

Colin Marquis, Canadian pulp sales manager, Montreal; and B. G. R. Cotterill, Ontario pulp sales manager, Toronto.

Quarter-Century Group at Erving

102 years on the job is the record established by three members of the Quarter-Century Group at Erving Paper Mills, Erving, Mass. David Housen, president of the mills, in a special ceremony honored Ernest L. Desrosiers, superintendent of stock preparation, for his 30 years of service to the company. Mr. Housen was in turn honored for his 30 years with the company by Ralph Hall, senior member of the group, 42 years with Erving Paper Mills.

COST REDUCTION
that isn't COSTLY

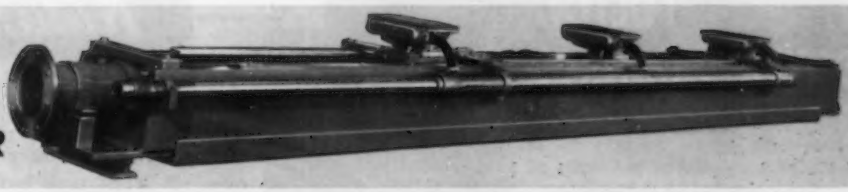
VICKERY FELT CONDITIONING

A quick, sure way to effect substantial savings with a minor investment in equipment: install Vickery Conditioners for press felts and wet felts.

Keeping felts continuously open and clean pays off in lower drying cost, improved uniformity of paper finish and often in increased felt life. Reduced down time and elimination of machine slow downs toward the end of the week are other plus factors.

VICKERY PRESS FELT CONDITIONER

VICKERY WET FELT CONDITIONER



BIRD MACHINE COMPANY

SOUTH WALPOLE, MASS.

REGIONAL OFFICES: EVANSTON, ILLINOIS
PORTLAND, OREGON • ATLANTA 9, GEORGIA

Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal

Bag Plant Planned in Mississippi

A one million dollar multiwall paper bag plant will be built by First Mississippi Corp., according to Fred A. Anderson, Jr., president of the corporation.

The site of the proposed plant has been conditionally selected as Yazoo City, Miss. Definite location of the plant is contingent upon a satisfactory local stock sales program and the availability of an adequate BAWI bond issue.

The proposed plant will be designed to convert 1,000 tons of raw paper into multiwall bags each month.

CZ Changes at St. Louis Box Plant

Crown Zellerbach announces the following staff changes:

Carrol G. (Jack) Hornor, Gaylord superintendent, St. Louis box plant—to Gaylord assistant manager, St. Louis box plant.

Harry J. Schmol, Gaylord assistant superintendent, St. Louis box plant—to Gaylord superintendent, St. Louis box plant.

William W. Hinton, Gaylord senior industrial design engineer, St. Louis box plant—to Gaylord assistant superintendent, St. Louis box plant.

Fred Schaper, Gaylord junior industrial engineer, St. Louis box plant—to Gaylord senior industrial engineer, St. Louis box plant.

Gummed Products Installing New Machines

Gummed Products Co., Troy, N. Y. reports a $260,000 machinery expansion project is underway. The company, which produces gummed paper products, said it has completed installation of a new waxing machine and has started work on a laminating machine. Installation of the machinery is expected to take about a year.

J. W. Markley, treasurer of the firm, said experiments with a new packaging machine also have been started.

Crowell Expands High Speed Equipment

Crowell Carton Co. at Marshall, Mich., a division of St. Regis Paper Co., has completed a year-long $625,000 expansion program which included installation of $325,000 worth of high speed equipment. Crowell manufactures metal-edged cartons, such as those used for packaging aluminum foil.

Gault Resigns from Hoerner

Arthur C. Gault, superintendent of the Keokuk, Iowa plant of Hoerner Boxes, Inc., resigned his position September 20.

Herbert Kirchner, assistant superintendent, will be in charge of production until Mr. Gault's successor is named.

National Paper Box Promotes Sadler

James T. Sadler has been promoted to executive vice president of National Paper Boxes Inc., Kansas City, Mo. Mr. Sadler, who has been with the company nine years, was vice president.

S. Orr Davidson Jr. has rejoined the company as vice president. Before returning to National Paper Boxes, Mr. Davidson was with another paper box firm in Kansas City. Prior to 1948 he was with National more than 20 years.

Todd Enlarges Bank Printing Activity

The Todd Co. Division, Burroughs Corp., Rochester, N. Y., is expanding its printing production activity, especially in bank imprinting.

Latest development was the announcement by Director of Manufacturing A. Richard Todd of the addition of two new bank service plants, the creation of four new production functions and the appointments of the men to handle them. The announcement followed the recent opening of two new branch plants replacing outmoded facilities at Philadelphia and Cincinnati.

The new bank service plants, modeled on a pilot installation started in the firm's main plant in Rochester last year, are located at Park Ridge, N. J., and in Todd's New England branch plant, Malden, Mass.

John N. Friedman was named to the newly-created post of general printing production manager, with responsibility for all printing plants. Howard F. Wolfanger became production manager, bank service plants; Robert E. Carter was appointed eastern production manager, with responsibility for eight eastern plants, and Gordon G. Minter was named western production manager, with responsibility for four western plants. Louis E. Kleinhans was appointed superintendent of the Hadley plant, Los Angeles.

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Browning Malleable
Flange Blocks

Illustrates and describes their "unbreakable" malleable two-bolt type flange blocks. Bulletin BU-101-A. Browning Mfg. Co., Maysville, Ky.

C & D
Batteries

Gives details on complete line of premium Slyver-Clad truck batteries. Bulletin IT-528. Covers the use, design and construction of their standard line of PlastiCell lead-antimony grid batteries for all stationary battery applications. Bulletin CP-532. C & D Batteries, Inc., Washington & Cherry Sts., Conshohocken, Pa.

Fibercast Pipe
and Tubing

Discusses what it is; production quality control; pipe strengths; engineering data and charts; chemical resistance; specifications; installation procedures; and applications in the chemical and other industries. Bulletin. Fibercast Co., Box 727, Sand Springs, Okla.

Goulds Centrifugal
Pumps Figure 3406

Includes a general description of these pumps, specifications, sectional views, mechanical data, performance curves, and dimensional data. Bulletin 721-6. Goulds Pumps, Inc., 47 Black Brook Rd., Seneca Falls, N. Y.

Feedwater
Heaters

Features a cutaway drawing of a unit with step-by-step operating description, a review of the counter flow principle and reasons for a vent condenser. Bulletin S-217. Stickle Steam Specialties Co., 2215 Valley Ave., Indianapolis, Ind.

Model F-45T3 and F-45T4
Electric-Powered Trucks

Contains detailed specifications along with basic dimensions and tuning diagrams of Model F-45T3 fork truck. Bulletin EP858. Model F-45T4 features compact design and is available in 68-inch and 83-inch high models. Bulletin EP958. Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland, Ohio.

Pyrex Brand
Y-Valve

Provides both service and engineering recommendations and a full description of this valve. Also included is a schematic drawing with complete identification of all parts and materials, along with a pressure drop data chart. Bulletin PE-4. Plant Equipment Sales, Corning Glass Works, Corning, N. Y.

Buck-el Conveyor
Elevator

Illustrates various types of buckets, pulleys, etc. available, as well as giving complete range of models. Also shows sanitary construction features, including cantilever design. Brochure. Bucket Elevator Co., 360 Springfield Ave., Summit, N. J.

Dial Indicating
Handwheels

Contains illustrated sales copy on a variety of valve position indicators adaptable to many industrial uses. Catalog G. Tejax Engineering Corp., 180 Weeden St., Pawtucket, R. I.

Magnetic Flow Meters
for 1/10 and 3/16 Inch Lines

Outlines typical "difficult" liquids which can be measured and stresses the use of the instruments in ratio flow control and pilot plant application. Also includes specifications, dimensions, and other instrument data. Bulletin 20-14C. Foxboro Co., Foxboro, Mass.

Pneumatic Bulk
Trucks

Contains illustrations of various truck models and a diagrammatic presentation of the "on-board" air system. Also includes photographs of actual bulk trucks serving the plastics, chemical and other industries. Bulletin 205. Sprout, Waldron & Co., Inc., 130 Logan St., Muncy, Pa.

Houghton Val Pac
Compression Packings

Contains description, specifications and recommendations for several types of compression and sheet packings which fill the requirements for most industrial squeeze gland applications. E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia, 33, Pa.

Fully Annealed Heat
Exchanger and Condenser Tubes

Explains how welded stainless steel exchanger and condenser tubes are made and points out the advantages of using fully annealed tubing. Folder TB-415, Tubular Products Div., Babcock & Wilcox Co., Beaver Falls, Pa.

Igepon
Surfactants

Describes the chemical derivation of Igepon and gives the chemical formula, functional properties and uses of each of the brands. 16 p Booklet. Antara Chemicals, 435 Hudson St., New York 14, N. Y.

Indicating
Flowrator Meters

Features vitreous enamel lined end fittings and is designed for corrosive service. Specification Sheet 10A1710. Fischer & Porter Co., 785 Jacksonville Rd., Hatboro, Pa.

Horizontal Size
Press Advantages

Includes complete description, illustrations and engineering diagram of typical installations, as well as case histories of actual installations. Brochure A-15. Patton Mfg. Co., Inc., 1806 W. Pleasant St., Springfield, Ohio.

DT-2 Digital
Tachometer

Contains description of this electronic device which indicates and records rotational speed with better than 0.1% accuracy. Southwestern Industrial Electronics Co., 2831 Post Oak Rd., Houston, Tex.

Valves for Instrument
Piping and General Use

Gives feature, application information, pressure-temperature ratings and specifications. Data Unit 302. Jerguson Gage & Valve Co., 80 Adams St., Burlington, Mass.

One-Way Cut-Off
Register Control

Illustrates by photographs, line drawings and a chart the simplified design and ease of installation of this control. Bulletin GEA-6685A. General Electric Co., One River Rd., Schenectady 5, N. Y.

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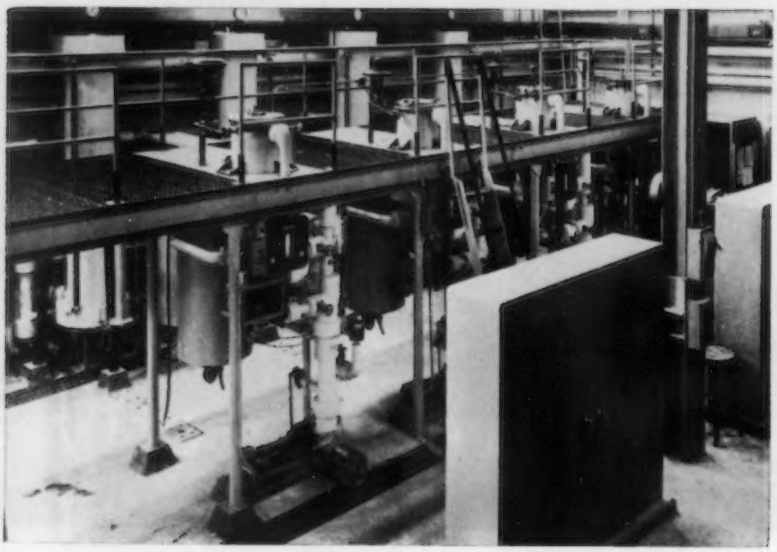
ALLIS-CHALMERS

P.P.R.I.C. Opens New

New quarters of Pulp and Paper Research Institute of Canada.



Digester area is equipped to cook by all the pulping processes.

Conditioned room for paper testing. Instron tensile tester, at center.

Last week the new building of the Pulp and Paper Research Institute of Canada was officially opened. All the major operations of the Institute excepting its academic activities will be located at the new center in Pointe Claire, Que., 17 miles from downtown Montreal. The academic training program in co-operation with McGill University will be continued in the Institute's building at 3420 University St.

The Canadian Institute represents a long-standing national partnership. Supported jointly by the Government of Canada, the Canadian Pulp and Paper industry and McGill University, it has been a successful experiment in co-operative enterprise for furtherance of basic science and industrial technology and the production of highly-trained scientists and skilled industrial research personnel.

It is one of the first institutions in the world in which industrial research and the training of graduate students along lines of specific interest to industry were carried forward under the joint sponsorship of a national government, a world-renowned university, and a major industry.

The Institute acts as a fundamental research center for Canada's pulp and paper industry. In this, it supplements the research organizations of individual companies. It stimulates and assists in the post-graduate training of McGill University students who are working toward higher degrees in science and engineering, those particularly whose theses deal with subjects of interest to the industry.

The Institute also conducts research projects at the request of individual companies, groups of companies, or other sponsors in allied industries when such work relates to the processes or products of the pulp and paper industry.

A further important function is to serve as a clearing-house and distribution center for all kinds of technical and scientific information of importance to the industry. Finally, the Institute pro-

Officially Building

vides trained technical personnel and highly specialized equipment to carry out non-routine analytical and physical tests and measurements at the request of the individual companies.

New Research Laboratories

The new research laboratories at Pointe Claire were built and equipped to the Institute's specifications by the Federal Government at a cost of two and a quarter million dollars. Some of the furnishings and about a half a million dollars' worth of apparatus and equipment were provided by the industry. Much has been transferred from the original building in Montreal.

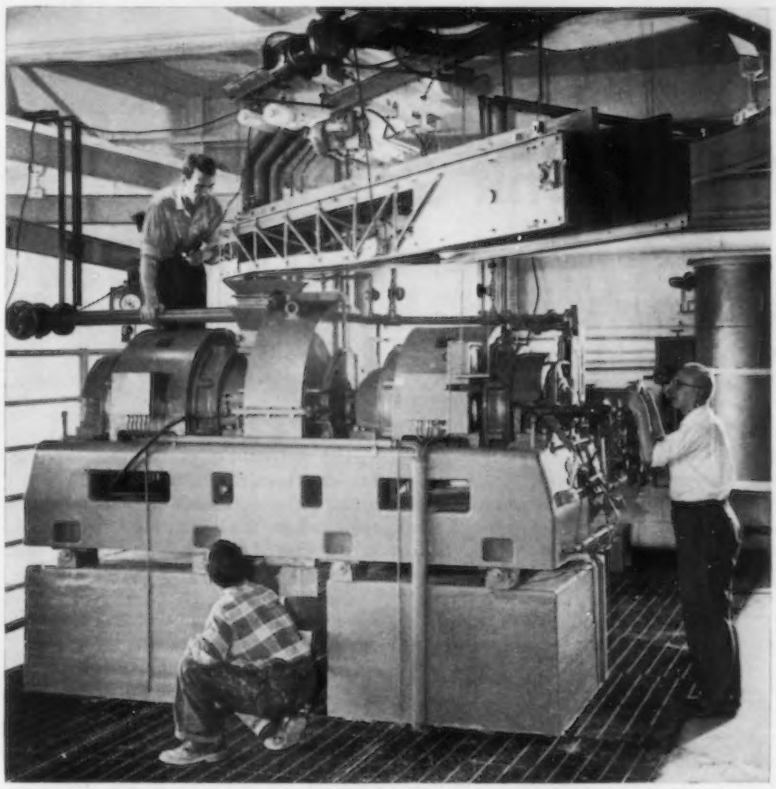
One of the chief design requirements was that the building permit unrestricted expansion of any major section without interference with any other. This requirement was met by arranging the building in four wings, right angles, each of which houses a particular type of operation to one another. The design also permits any desired vertical or horizontal redistribution of working space. The size of the surrounding site is sufficient to accommodate any expansion currently envisioned.

Photographic, microscopic, editorial, draughting and other services, including chemical and physical analytical testing facilities, provided by the Institute's Technical Services Department and centered at the new building are freely available to staff research members at both locations.

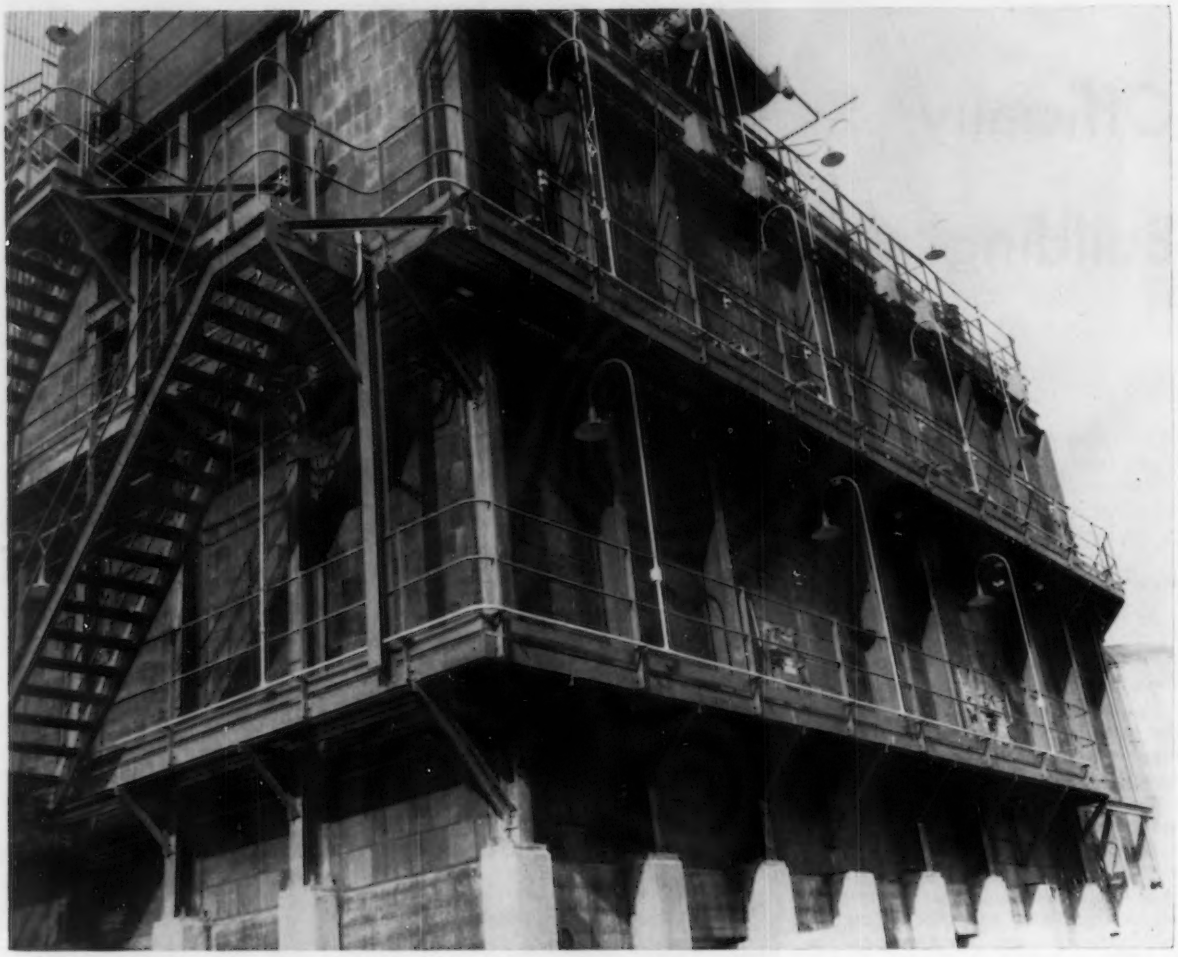
The Institute's full-time continuing staff numbers 168, of whom 131 are technical and scientific personnel. Twenty-two graduate students are currently participating in the thesis program.

The operating budget for this year is $1,500,000 dollars, of which two thirds come from maintaining member company assessments, $100,000 as a continuing annual grant from the C.P.P.A., and the remainder as revenues from sponsored research contract projects, and from chemical and analytical testing, and consulting services.

Forestry research is part of program. Above, softwood tree seedling growth is being studied under special conditions.



Thirty-six inch disk refiner is part of the pilot plant equipment available for pulping and stock preparation research.



Three-Unit Precipitator Saves $1000 Daily at Longview

W. H. Blessing

San Francisco District Manager
Research Cottrell, Inc.

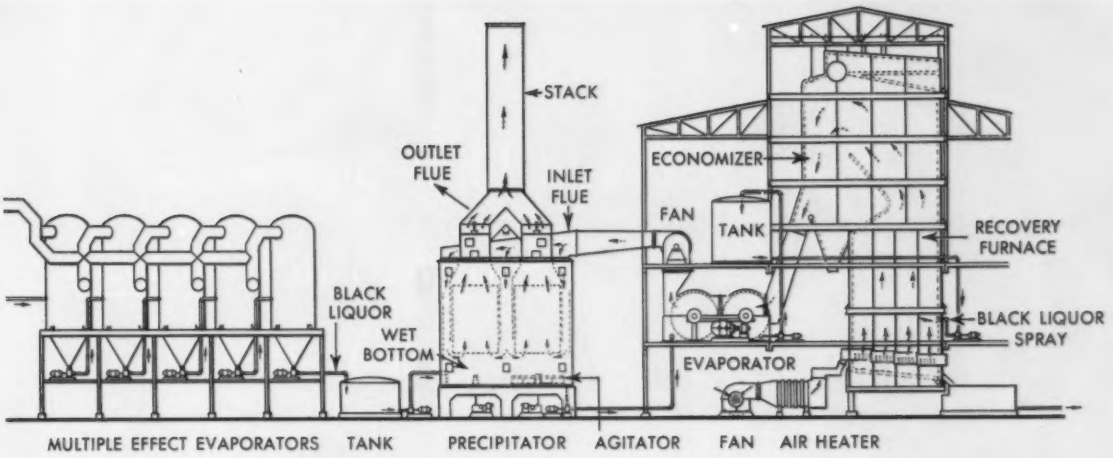
Kraft mills occupy the fortunate position of being able to extract valuable sodium salts from flue gases while reducing air pollution. The air cleaning and salt cake recovery functions are carried out simultaneously in the same equipment — the Research-Cottrell wet-bottom electrostatic precipitator. The precipitator is an integral part of the pulp mill salt cake system.

Intensive studies showed that a precipitator could operate on gases above the gas dewpoint. This led to its acceptance in the paper industry. The gases leaving the evaporators are at such a temperature that dry precipitation can take place. The equipment could therefore be built of steel because corrosion was thus at a minimum.

The wet-bottom precipitator receives hot gas from the furnace via the evaporator. The chemicals in the gases are removed in the precipitator. In brief, in the precipitator a high voltage unidirectional current is connected to discharge electrodes. These wires are suspended between grounded collecting electrodes or plates. As the particle-laden gas passes through the precipitator, the high voltage electrical field, the particles receive a negative charge. Because the collecting electrodes is positively charged, the negatively charged particles are attracted to the collecting plate. They then become electrically inert. A rapping device raps the plates every five minutes at Longview causing the particles to fall down into the wet-bottom and into the pool of circulating black liquor.

With the development of the wet-bottom precipitator, there is no handling problem. Removal of collected dust is continuous and automatic.

Since the development of the wet-bottom precipitator by Research-Cottrell, Inc., this company has installed more than 112 precipitators in paper mills in the United States and Canada. Included in this total is one wet-bottom precipitator consisting of two units to treat 145,000 c.f.m. of gas at 315°F. installed at Longview Fibre in 1954. In the years 1954-1957 alone, the



cleaning capacity of new wet-bottom precipitators installed in paper mills totalled 3,621,000 c.f.m.

Longview Fibre Installation

One of the largest wet-bottom installations is the three-unit precipitator which began operating in October 1957 at the Longview Fibre Co., Longview, Wash. The precipitator removes suspended solids, principally sodium salts, from the gases created in the recovery furnace which burns 2,000,000 pounds of black liquor solids daily at design capacity. The recovery boiler is the largest of its type in the world. Through the use of oversized fans, the furnace, designed by Combustion Engineering Co., is capable of burning 3,000,000 lbs./day of black liquor solids.

The precipitator is rated at 197,000 c.f.m. at 300°F. with 95 per cent efficiency. In the Longview installation the flue gases pass vertically through 27 ducts formed by the collecting electrodes each 10 inches by 17 feet, 6 inches high by 13 feet 6 inches long.

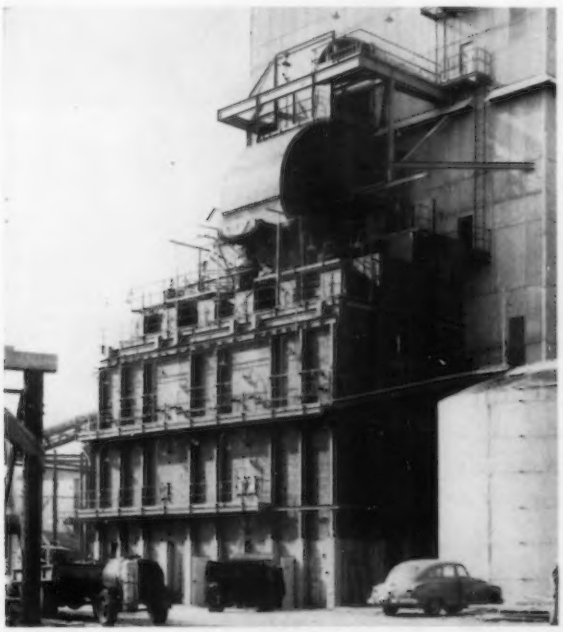
Performance Data

The result of a series of builder's tests show that the precipitator meets guarantees under all conditions.

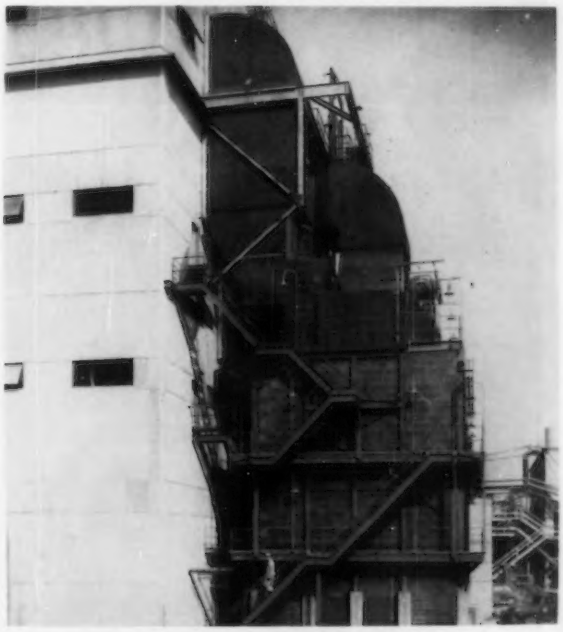
The average results of five tests run with all three precipitator units operating at a gas volume of 105 per cent of design load gave an efficiency of 96.7 per cent with flue inlet dust loading of 3315 lb./hr. and a flue outlet loading of 105 lb./hr.

While the efficiency is impressive from an air pollution reduction standpoint, it is also of importance economically. About 38 tons of saltcake per day are recovered and returned to the system. Assuming a cost of $28/ton in bulk at the works for saltcake, this represents a saving of over $1000/day.

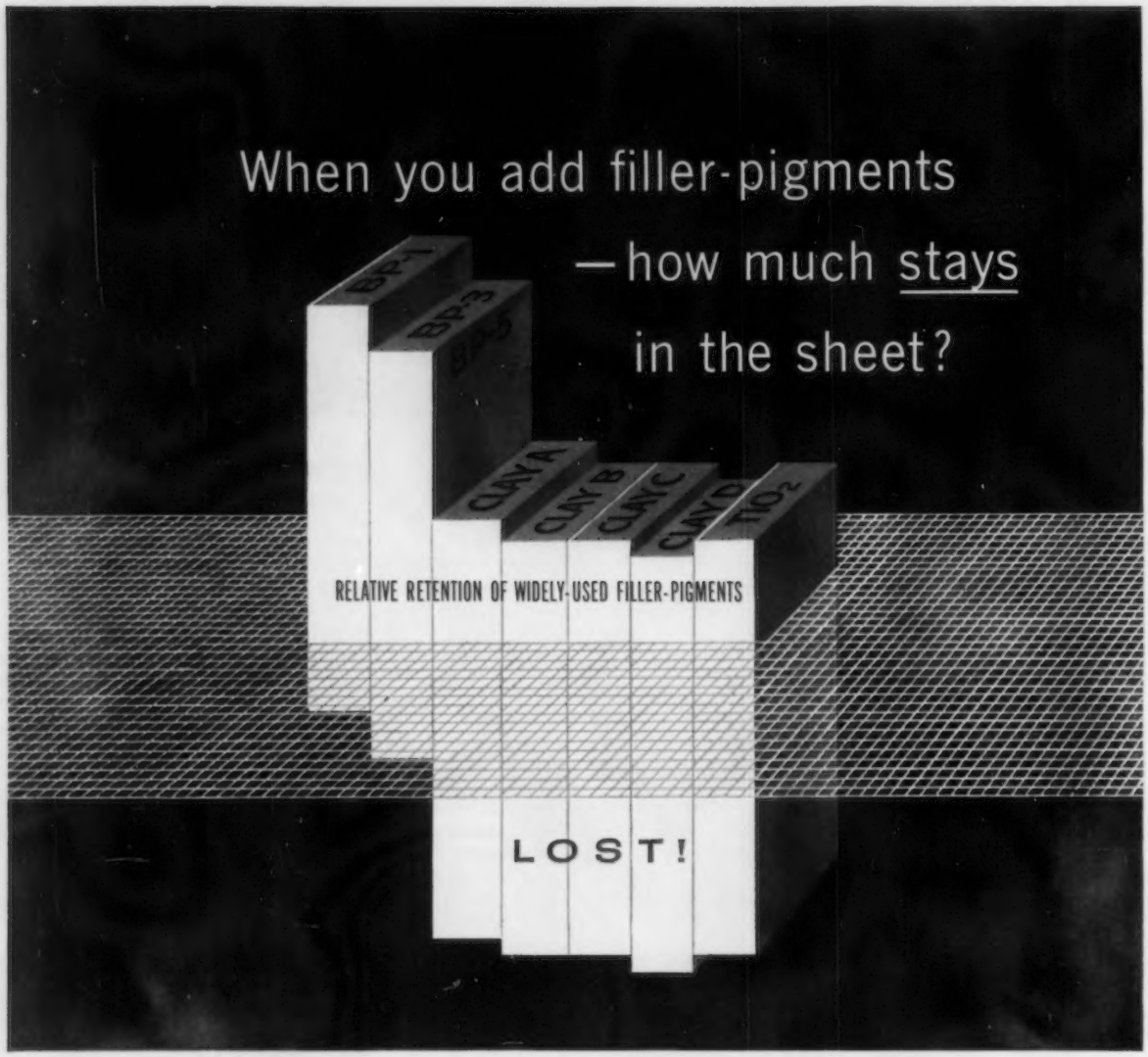
The Longview precipitator is arranged in three units for flexibility and so that two units can handle the load at high efficiency while the third unit is being inspected and maintained.



Wet-bottom precipitator at Longview Fibre shows outlet flue or duct to stack. Precipitator shell is of hollow vitreous tile support on steel framework.



Side view of precipitator. Gas to be treated enters through lower of large ducts at top. Treated gases pass through large duct above inlet duct to the stack.



Recent tests prove that 3 times as much high-brightness Dicalite stays in the sheet as any other type of filler-pigment! This startling information, presented here for the first time, was developed in recent tests conducted in a leading Mid-Western paper mill. Two types of furnish were used—patent white and bleached manila, both prepared according to TAPPI T-200-M-45—and the tests conformed strictly to TAPPI T-205-M-53.

We believe that when you consider all the factors established by these tests...the higher retention of Dicalite Paperaids . . . the high brightness of Dicalite (especially BP-1, 89.6 on the G.E. scale) which allows the replacement of substantial amounts of TiO_2 without impairing the brightness of the sheet . . . and the cost advantages of Dicalite, from the standpoint of cost per pound *retained in the sheet* . . . you will find Dicalite Paperaids of greater value than ever before. Definitely, they help you make a better sheet at lower cost.

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The tissue she uses has greater strength and better physical properties because it has been processed on a Bauer Pump-Through Refiner. Tissue manufacturers are finding extra sales advantages because the Bauer Refiner gives better strength characteristics to the pulp and more uniform tissue formation. This refiner, by its unique action reduces fiber thickness but retains fiber length. Write for specific recommendations.

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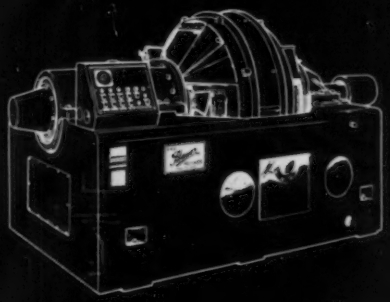


Suction Transfer and Its Application to Groundwood Printing Papers and News

Although suction-transfer is relatively new to the paper industry, a considerable amount of knowledge has been built up about its advantages and disadvantages, running speeds and the design and care of the felts used to clothe it. Some of the techniques for increasing machine output and improving the quality of groundwood printing papers and newspapers made on this type machine were described at a recent round table discussion between a group of mill superintendents and felt designers, felt sales and service engineers held at Albany Felt Co., Albany, N. Y. Summarized in this article are the major subjects covered in that discussion.

Types of Suction Transfer

To assure mutual understanding of the terminology used in connection with suction transfer, the three basic types are shown. These are: The Twin-ver Press, the Inver-Press and the Suction Pickup Press.

Advantages and Disadvantages

In a discussion of the advantages and disadvantages of the suction transfer arrangement, one superintendent running book grades on a Twin-ver press was enthusiastic because he believed it increased the strength of the paper by reducing the percentage of stretch from the wire to the press felt. In fact, he pointed out that on their Twin-ver press the percentage of stretch had been reduced from five and one-half to less than one per cent.

He further stated that in this Twin-ver press arrangement and with others with which he is familiar, this reduction in stretch had made it possible to increase machine speed considerably because the stronger sheet minimized the danger of breaks.

Another superintendent running newsprint grades on a suction pickup press, however, did not feel there were any advantages in this type arrangement. In fact, he claimed their machine is harder to work with than an open draw machine.

Although he agreed the suction transfer arrangement is preferable for high speeds on newsprint, the overall cost per ton of paper manufactured is considerably higher than with the standard hookup. He also stated that it takes considerably longer to get back into operation after a shutdown with a suction transfer press than with a standard one.

Felt Design and Its Effect

Variations in stock and machine characteristics within each mill make it almost impossible to single out any one felt design that can be applied universally to all machines. To illustrate, a superintendent of a groundwood book mill indicated a super press felt was being used on the transfer position while the superintendent of another mill producing essentially the same grades of paper declared they had found it necessary to clothe that position with a plate press felt.

Synthetic Content in Felts

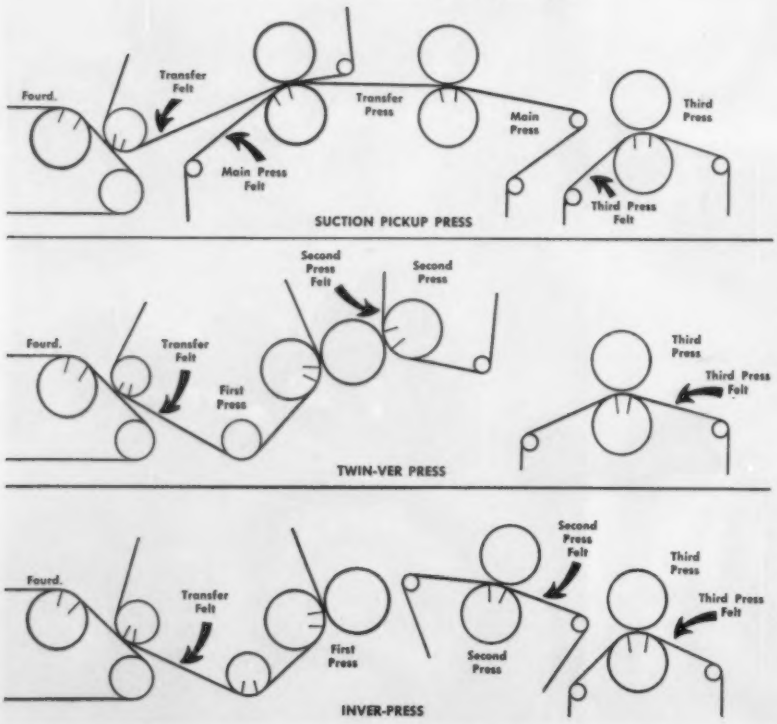
The use of synthetic yarns in felts was discussed and it was agreed that their only advantage in suction transfer felts was their ability to resist abrasion, particularly when the felt was conditioned by one or more suction boxes.

It was pointed out that the use of synthetic yarns had to be carefully controlled, since synthetic content yarns have an adverse effect on a felt's absorbency properties. Unless unusual circumstances exist, it was agreed the total synthetic content should not exceed eighteen per cent. Higher percentages could be most detrimental to overall felt operation, particularly when shadow marking is encountered.

Maximum Drainage Essential

All in attendance concurred that the one design feature which all felts for suction transfer machine must have is good drainage within the limits of the

SUCTION TRANSFER MACHINE ARRANGEMENTS



finish requirements. Several superintendents pointed out the difficulty in keeping felts clean enough for top production. In this connection, Albany's special chemical treatments, such as J-3 and H-32, were commended by several superintendents for their ability to keep felts open and clean throughout their life, thus assuring maximum daily production.

Felt Life vs. Tons

An attempt to compare felt life on the transfer and press felt positions was impossible because of the many variables from one mill to another. Grades of paper produced, machine speeds, felt designs and felt life reported by the superintendents all differed. For example, one mill running groundwood book papers obtained only 12 days life from their transfer felts, while 20-30 days life was reported for the same position on newsprint.

It was agreed, however, that a much better yardstick in measuring efficient felt operation on any position was daily production or machine efficiency rather than felt life.

Cleaning Suction Transfer Felts

The importance of this subject was revealed by the lengthy discussion and variety of opinions expressed. The major problem is to prevent filling up of the felts, since this reduces drainage which makes it necessary to reduce machine speeds. One superintendent reported that their premature filling up problems were the result of pitch. This problem is usually most acute in the springtime—even with careful control of pH and machine water temperature (which averages 95-100° in the wintertime and about 110-120° in summer). They were running newsprint with a suction transfer and found it necessary to clean the felts thoroughly with detergents at least once or twice each shift by washing them on the fly. This was done by injecting the detergents through showers directed at right angles to the inside of the felt. These showers were located just beyond the point where the paper leaves the felt, in order to provide as much time as possible for the cleaning action of the detergents. A suction box or suction pipe is also used on each felt following the shower to complete the cleaning job. They also had to exercise great care in the use of the detergent to avoid sheet discoloration.

The superintendent of a Canadian newsprint mill, on the other hand, claimed the only time they had any pitch problems was when running a considerable quantity of jack pine stock. They had not found it necessary to use any synthetic detergents or washing procedure at all. On the few occasions where felts had filled up with pitch, they had used Oakite 19 to overcome the problem.

The superintendent of a Southern newsprint mill stated that they preferred muriatic acid to combat such filling up. The ensuing discussion again revealed the diversity of opinion on the most suitable felt cleaning agents.

Felt Conditioning

There was considerable difference of opinion about the most effective conditioning devices and hookups, which can also be traced back to the variations in machine conditions within each mill. To illustrate, the superintendent of a midwestern mill producing groundwood coated book, advocated the use of two showers on the face of the transfer felt and one on the inside of the felt followed by a suction box also on the face of the felt. He emphasized that the slot on the vacuum box be no more than ¼ inch wide and that a vacuum of 7-10 inches be maintained.

The superintendent of another book mill, recommended that the slot on the suction box be almost an inch in width and that only 6 inches of vacuum be used. He had found that several suction boxes working together on the same felt, each carrying about 6 inches of vacuum was the best conditioning method for keeping either the transfer or press felts clean.

Conditioning Rolls

With reference to suction rolls for conditioning transfer felts, the question was raised whether spiral or straight drilling was preferred. It was the consensus that spiral drilling was better, not only for conditioning, but also because it cut down the noise factor.

The composition of various types of rolls used on suction transfer machines was discussed and most superintendents agreed that for press rolls, Rubroc, Microroc and granite rolls were preferable. However, regardless of the composition of a roll, it was emphasized that maintenance of proper roll crown at all times was of utmost importance, not only to assure uniform drying action across the full width of the sheet, but also to prevent uneven felt wear.

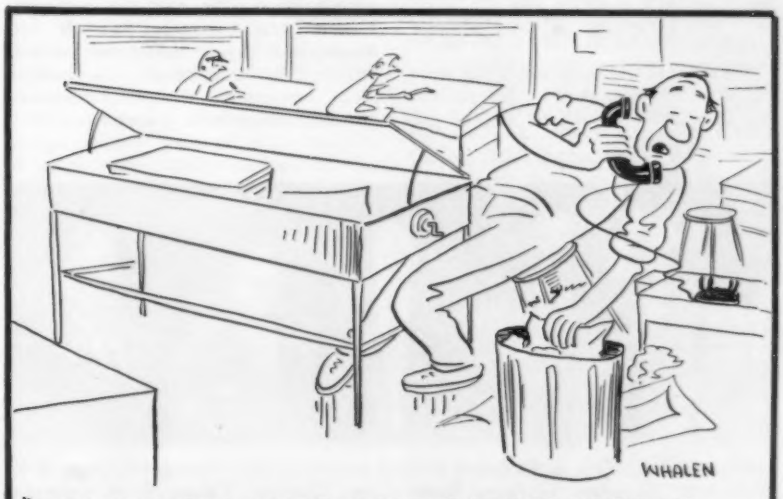
Wire Operation Suggestions

In some suction transfer mills, wire marking is a serious problem. To alleviate this, one superintendent had run the pickup roll slightly faster than the wire itself. He had found that if the pickup felt was not running fast enough, the wire and sheet would slide under it and create a crepeing effect.

He also mentioned that he had been able to double their wire life by installing a tension measuring divice on the wire. Control of the wire tension prevented any wrinkling, the cause, he had found, of short wire life.

The Roto-Belt is another device that has increased wire life. One superintendent reported that he knew of some mills where they had increased wire life 50 per cent through the installation of a Roto-Belt. The device prevented filling up of the wire, kept it cleaner and thus reduced wear of the wire during machine operation.

This meeting was another in a series of similar meetings held periodically at the Albany Felt Co., plant in Albany, N. Y. Moderated by the company's chief service engineer, Larry Woodside, the meeting was also attended by the company sales and service engineers from Mexico, Canada and the United States.



Groundwood Men Discuss All Aspects of Production

Third International Mechanical Pulping Conference was a huge success. World-wide participation and large enthusiatic registration were key factors

An outstanding program and exceptional interest by the registrants featured the third International Mechanical Pulping Conference held in Quebec City this month. This meeting, jointly sponsored by the technical organizations of the Canadian and American pulp and paper associations, attracted the world-wide attendance by groundwood experts.

Chairmen of the sponsoring committees were: T. G. Shepherd, Donnacona Paper Co. for the technical section, C.P.P.A., and A. A. Yonkowski, Kimberley-Clark Corp. for TAPPI. J. K. Kirkpatrick, Bowaters Southern, was conference chairman, E. H. Johnson, Stevens-Thompson Paper Co., headed the program committee and Mr. Shepherd was in charge of local arrangements.

We consider the program of this meeting so worthwhile that we are presenting summaries of all the papers presented and of all the panel discussions. An interesting feature of the meeting was the social function, banquet and dance. Informal clothing was worn and a French Canadian habitant dinner was served. The dance featured Jack Winchester calling square dances. The dinner speaker was Dr. L. R. Thiesmeyer, president, Pulp and Paper Research Institute of Canada, who chose as his topic "Science, Scientists and Social Change—Philosophical Musings about the Impact of Scientists on Our Modern Life and Vice Versa."

Keynote Address by Otto Brauns

In his address Mr. Brauns briefly sketched the history of the grinding process, pointing out that the first technical publication on the subject appeared in 1878 in Finland and was promptly suppressed by the author's employer. Twenty years later a Swedish mill owner, in a lecture before the Swedish Wood Pulp Association, put forward ideas concerning the mechanism of grinding which have a surprising similarity to current thoughts on this subject. Progress on the engineering side of grinding has been great, yet there has been no real change in the fundamental technique. There appear to be certain relationships between the present quality tests which hold true regardless of the equipment employed to make the pulp. However, Mr. Brauns suggested that these relationships may be only the results of present techniques and that quite new ones might appear if entirely new methods for producing groundwood were evolved, methods which might drastically reduce the present high energy cost of groundwood.

Mr. Brauns then dealt briefly with the future prospects of groundwood, pointing out that although the groundwood content of all American made papers except bookpaper and building board had decreased over a ten year period, yet the quantity of groundwood produced had steadily increased. In closing, he said, "Diligent, and above all, intelligent research, in harmony with practical achievements, will strike the keynote, clear and sharp, summoning all to join in the work for the advancement of a great industry."

OPENING SESSION: L. R. Beath, Price Bros. & Co. Ltd., Kenogami, Que.; J. K. Kirkpatrick, Bowaters Southern Paper Corp., Calhoun, Tenn.; E. H. Johnson, Stevens & Thompson Paper Co., Greenwich, N. Y.; Otto Brauns, Central Laboratories of the Swedish Paper, Mechanical Pulp & Wallboard Industries, Stockholm, Sweden; Piero Bersano, Cartiere Burgo, Torino, Italy.

FUNDAMENTAL EVALUATION CONCEPTS: W. B. Campbell, consultant, Montreal, Que.; W. Gallay, E. B. Eddy Co., Hull, Que.; G. Herwig (at rear), Finch, Pruyn & Co., Glens Falls, N. Y.; M. J. Beasley, Canadian International Paper Co., Gatineau, Que.; C. Anker, Risor Tremassefabrikker, Risor, Norway; B. Steenberg, Swedish Forest Products Research Laboratories, Sweden; A. A. Robertson, Pulp & Paper Research Institute of Canada, Montreal, Que.; J. d'A. Clark, consulting engineer, Victoria, B. C.

FOREIGN EXPERTS: B. Steenberg, Swedish Forest Products Research Society, Stockholm, Sweden; W. H. Brecht, Technische Hochschule, Darmstadt, Germany; Douglas Jones, Technical Section, C.P.P.A.; C. Anker, Risor Tremassifabr., Risor, Norway; Otto Brauns, Central Laboratories of the Swedish Paper, Mechanical Pulp and Wallboard Industries, Stockholm, Sweden.

Fundamentals of Groundwood Evaluation

Moderator—Dr. W. Gallay. Panel—J. d'A. Clark, consulting engineer, Victoria, B. C.; G. Herwig, Finch, Pruyn & Co., Glens Falls, N. Y.; B. Steenberg, Swedish Forest Products Research Laboratories; A. A. Robertson, Pulp & Paper Research Institute of Canada; W. B. Campbell, Consultant, Montreal, P. Q.; C. Anker, Risor Tremassefabrikker, Risor, Norway.

The roster of the panel was a guarantee that discussion would be lively, learned and authoritative. Perhaps it was not by pure chance that those two public antagonists, and private cronies, Drs. Campbell and Clark, were seated at opposite ends of the table. For nearly three hours the panel, aided and abetted by participants from the floor, held the attention of the delegates as they followed groundwood from the paper-machine head-box to the reel.

Dr. Gallay, in introducing the afternoon's subject, made a plea for an increased understanding of the nature of groundwood, and for more significant means for its evaluation, in order to make possible meaningful specifications in the light of its end use. Only when this task had been completed did he feel that the industry would be in a position to attack seriously the problem of improving the efficiency of groundwood production.

The merits of several systems for measuring the drainage characteristics of pulps were considered, notably the freeness test, and the method of Brecht and Klemm which employs the Rapid-Kothen sheet machine. Professor Brecht described his latest work in hand which is based upon the air resistance of a wet web of pulp. He believes that this method shows promise as a simple and rapid test for drainage. The characteristics of fines and their importance were discussed and the existence of "good" fines (or schleimstoffe), and of "poor" fines (flourstoffe) was debated. The majority opinion seemed to favor the concept of two types of fines, but there was a minority group which was not convinced of its validity. The moderator reminded the meeting that as yet there was no uniformly accepted definition of the term "fines," pointing up the difficulty of describing groundwood.

Next came a discussion of wet-web strength, with Dr. A. A. Robertson describing a recently developed method for measuring the tensile strength of pulp/water mixtures at consistencies as low as 0.3 per cent. This test appears to take into consideration such factors as fiber entanglement, surface tension, interfiber friction, bulking properties, and percentage of solids in the mixture. Its possible use as a control method remains to be assured.

The fact was noted that, although the addition of chemical pulp to groundwood generally increases the wet-web strength, there may exist certain conditions under which a further addition will not increase this property, but may even decrease it.

Dr. Bersano pointed out that in almost all considerations of groundwood manufacture, the end use was a paper made from a mixture of groundwood and chemical pulp. Since the requirement was a good piece of paper, rather than "good" groundwood (which ap-

peared difficult to describe), one must bear this in mind and think of groundwood as a partner in the paper sheet rather than for itself only.

There was some question of the correlation of wet-web strength to paper production and to the dry properties of paper. The advent of the pick-up felt in news machines may well have made the wet-web test of little significance for mills operating with such equipment.

The panel passed on to the subject of dry paper strength and to a discussion of just what holds fibers together in the form of paper, particularly when they are groundwood fibers and thus rich in lignin. The concept of hydrogen-bonding was considered to hold, since the lignin-containing groundwood components are wetted by water just as relatively lignin-free chemical pulp fibers are wetted. Also the extreme mutilation of groundwood fiber exposes the almost lignin-free inner layers so that nearly pure cellulose is available for bonding.

Dr. Campbell pointed out that only when fiber-fiber bonds are formed at two places, relatively far apart, are they useful, and that of the myriad of bonds in a sheet of paper, many are serving no useful purpose. He went on to state his opinion that the property of stretch has not been given enough consideration—that paper breaks because it lacks stretch, not tensile strength (several in the audience Hear! Hear!). Stretch is not time dependent, as is tensile strength. When stretch is imposed on paper, it is permanently used up, as it were, and there remains less stretch available to resist a second further stretching. He also felt that paper should be considered as a structure, and that the mechanism of its failure should be studied under the microscope to see just what happens to the fiber-fiber bonds when the paper fails.

Dr. Steenberg described work in progress in his laboratory in which paper under stress is examined by electrical method, the paper making "noises" when stretched, but becoming quiet during relaxation. He stressed the need for really basic research on the mechanism of paper failure.

No description of the proceedings of this panel could be complete without reference to Dr. J. d'A. Clark's reiterated opinion that the slimness of the fibers of groundwood is just about the most important factor which can be measured. Dr. Clark, in his inimitable manner, was able to produce reasons for the importance of this attribute whether drainage wet strength, dry strength or printability were being considered.

Cleaning and Screening Methods

Moderator—L. A. Miller; panel— D. S. Burak, Escanaba Paper Co., Escanaba, Mich.; N. E. Ward, MacMillan & Bloedel Ltd., Port Alberni, B. C.; B. Steenberg, Swedish Forest Products Research Laboratories; J. A. McLean, Great Northern Paper Co., Millinocket, Me.; M. G. M. Tuck, Howard Smith Paper Mills, Ltd., Cornwall, Ont.; I. M. McArthur, Canadian International Paper Co., Three Rivers, P.Q.

This final session of the conference dealt with the somewhat unglamorous but vitally necessary business of removing the small amount of unwanted matter which seems always to accompany even the best grinding operation. The moderator called on each panel member for a brief talk on various points and then asked for a no-holds-barred question and answer period—and he got it.

On the subject of general theory, Dr. Steenberg described the "Cascade" system (in which pulp is accepted to the paper machine system only from the primary screens) and it appeared from delegates' comments that most mills were presently following the Cascade approach. However, there were some dissident voices from large newsmills where other methods were followed, with apparently very satisfactory results.

As decker capacity is always a problem, the appearance of high consistency screening (over 1 per cent consistency) as described in an immediately preceding paper, caught the meeting's attention. As all screening and cleaning operations are most efficient under constant consistency conditions, the lack of really satisfactory consistency controllers for low consistency pulp still presents a challenge to instrument makers. Dr. Steenberg suggested a scheme employing two centrifugal cleaners so arranged as to extract from the main flow of bull-screen accepted pulp a small flow of clean pulp at a higher consistency suitable for conventional regulators, and yet dependent upon the original low consistency. Thus conventional regulators might be used to control a consistency much lower than that for which they were designed.

The use of centrifugal cleaners appeared to be increasing, with the majority installed on refiner effluents. However, a few mills were cleaning all the pulp prior to deckering. Dr. Tuck believed that a centrifugal cleaner could be designed to remove almost any type of objectionable matter, pointing out that cleaners are designed to provide a wide range of centrifugal force to suit different cleaning requirements. The advent of these cleaners in groundwood mills have had no striking effect on wire life, it appeared, but there was general agreement that calender stack maintenance had been sharply reduced.

As usual, screen plate life, perforation size and materials of construction were items of interest to the delegates. The

GRINDING: J. Steeves, Anglo-Newfoundland Development Co. Ltd., Grand Falls, Nfld.; A. M. Cuthbertson, Abitibi Power & Paper Co. Ltd., Sault Ste. Marie, Ont.; F. W. Bishop, Southland Paper Mills, Lufkin, Texas; J. C. Hunter, Powell River Co. Ltd., Powell River, B. C.; R. M. Murley, Bowaters Newfoundland Pulp & Paper Mills, Ltd., Corner Brook, Nfld.; J. K. Kirkpatrick, Bowaters Southern Paper Corp., Calhoun, Tenn.; J. H. Perry, Norton Co., Worcester, Mass.; C. L. Colbath, West Tacoma Newsprint Co., Steilacoom, Wash.; missing R. T. Wetmore, Ontario Paper Co. Ltd., Thorold, Ont.

TAILORING GROUNDWOOD FOR END USE

S. R. Parsons, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.; C. A. Richardson, Blandin Paper Co., Grand Rapids, Mich.; J. A. McLean, Great Northern Paper Co., Millinocket, Me.; F. S. Hoholik, Manistique Paper Co., Manistique, Mich.; P. M. Quinn, Quebec North Shore Paper Co., Baie Comeau, Que.; J. C. Hunter, Powell River Co. Ltd., Powell River, B. C.; E. P. Walsh, Anglo Canadian Pulp Paper Mills Ltd., Quebec; G. P. Brown, Koehring-Waterous Ltd., Brantford, Ont.; R. W. Leaf, Shawano Paper Mills, Shawano, Wis.; missing W. J. Walker, Champion Paper & Fibre Co., Pasadena, Texas.

MODERN SCREENING AND CLEANING METHODS

R. W. Swenson, Great Northern Paper Co., Millinocket, Me.; N. E. Ward, MacMillan & Bloedel Ltd., Port Alberni, B. C.; L. A. Miller, New Brunswick International Paper Co., Dalhousie, N. B.; B. Steenberg, Swedish Forest Products Research Laboratories, Stockholm, Sweden; J. A. McLean, Great Northern Paper Co., Millinocket, Me.; D. S. Burak, Escanaba Paper Co., Escanaba, Mich.; A. E. Dentremont, Great Northern Paper Co., Millinocket, Me.; G. M. Tuck, Howard Smith Paper Mills Ltd., Cornwall, Ont.; I. M. McArthur, Canadian International Paper Co., Three Rivers, Que.

use of Inconel appeared to be finding increasing favor. Routine inspection of screens found favor in many mills, but at the rather wide interval of a range of from one to nine months.

Scrupulous mechanical maintenance of grinders and auxiliary equipment was stressed as one of the best ways to relieve the screening system of unnecessary loads. In other words—make your groundwood on the pulp-stones, not in the refiner system.

Following general coverage of some of the relatively minor but aggravating problems of the screen room, the session was declared closed by the moderator, who then called on J. K. Kirkpatrick, general chairman of the Conference. Mr. Kirkpatrick expressed his thanks to all those responsible for making the conference the success which it very obviously had been. He commented on the very high percentage of attendence at all sessions and on the very general participation by all the delegates. He then declared this third conference at an end, but with the thought that, without doubt, it would not be the last International Mechanical Conference.

Optimum Grinding Techniques

Moderator—R. T. Wetmore; panel—J. K. Kirkpatrick—"Is Micrometric Burring Worthwhile?"; J. Steeves—"Effect of Surface Speed on Pulp Quality"; J. H. Perry—"How Much Power Should Be Connected to the Stone?"; A. M. Cuthbertson—"What is the Ideal Grinding Pressure?"; R. M. Murley—"Optimum Grinder Pit Conditions"; F. W. Bishop—"Southern Wood Species and Wood Condition"; C. L. Colbath—"Western Wood Species and Wood Condition"; J. C. Hunter—"Common Sense in Pulpstone Specifications."

Each panel member gave a brief talk on one phase of the subject and then discussion was general with panel and audience participating.

J. K. Kirkpatrick stressed two points: 1) that it is not possible to produce and maintain a proper, full stone pattern without the use of a micrometer burring lathe, and that all sharpenings should be made by experienced personnel under competent supervision; 2) that burring lathes and all related gear must be well maintained and inspected. He personally preferred to sharpen rather lightly, with a burr penetration of .004-.005 inches. In setting micrometer lathes stone and frame expansion and contraction due to temperature changes must not be overlooked.

J. Steeves reviewed briefly the subject of stone surface speed and its influence on pulp characteristics, bringing out the fact that there has been considerable disagreement on this point over the years. However, surface speeds have been increased in recent years so that a very large percentage of news grade groundwood is now made at high surface speeds with satisfactory paper-machine operations. Increasing stone speeds have brought nearly proportional production increases with little change in specific energy-consumption and perhaps some reduction in quality, if the latter can be defined. Surface speeds of 4000-5000 ft. are now common. Such high speeds may lead to some shattering of the fibers, but this may be offset by increased regrinding of pit pulp. Mr.

BLEACHING AND DRYING

Louis Gagnon, John Breakey Ltd., Breakeyville, Que.; H. Jacques, Finch, Pruyn & Co., Glens Falls, N. Y.; F. W. O'Neil, College of Forestry, Syracuse, N. Y.; R. M. Sternberger, Hearst Enterprises Inc., New York, N. Y.; C. P. Donofrio, College of Forestry, Syracuse, N. Y.

Steeves suggested that mills having grinders of identical design but employing quite different stone surface speeds might cooperate to settle this question. Some members felt that increasing surface speed led to a quality reduction sooner than did an increase in grinding pressure.

J. H. Perry commented on the trend toward higher energy-input to pulp stones, quoting a figure of 7200 h.p. in one case, where the h.p./sq. in. was 1.5. He felt that a loading of 2.0 h.p./sq. in. is possible if grinder frame construction will allow it. Such high power connections impose heavy loads on the flanges which transmit the power to the stone. Present day stones are constructed with a safety factor (as regards bursting) of 5.8 and Mr. Perry did not recommend any relaxation of this factor.

A. M. Cuthbertson, on the subject of grinding pressure felt that this factor was one of the tools in the hands of the groundwood producer and that it should be manipulated to help in maintaining satisfactory pulp quality. Obviously there can be no ideal grinding pressure. Pressures in the range 20-70 p.s.i., based on projected pocket area are presently employed, with the higher pressures occuring in mills grinding southern pine.

R. Murley spoke of grinder pit conditions in news grade groundwood mills. He felt that pit conditions should be controlled to favor the production of slender, flexible fibers and that high pit temperature (185° to 190°F.), low consistency (1½—2 per cent) and low stone immersion (2-3 in.) would be advantageous. However, he pointed out that such a combination might not be possible, particularly as pit temperature and consistency are interdependent variables. He felt that pit conditions are of relatively minor importance when compared to some other factors, such as stone characteristics.

Discussion of the effects of regrinding (if regrinding actually exists) followed. Some present felt that pulp carried into the grinding zone protected fibers from excessive cutting. It was pointed out that pitless grinding, as practiced at Risor, Norway, eliminated any possibility of regrinding, as did the method of Dr. Bersano which had been described in a preceding paper. Dr. Steenberg stated that his work showed that only a very small amount of water could possibly enter the grinding zone with the stone and that accordingly the quantity of pulp which could be carried in was extremely limited.

F. W. Bishop described operations in the southern groundwood mills where green wood must always be used to avoid decay. Southern pine fibers are broader than northern spruce fibers but are of the same length and wall thickness. Trial and error mill experiments have contributed the knowledge required to produce the present satisfactory newsgrade groundwood from these woods.

C. L. Colbath dealt with the problems peculiar to West Coast operations, such as variations in age, moisture content and size of wood, particularly the latter. Various shapes of wood must be ground from cylindrical sticks to split wood and sawn blocks. Rather different wood species are encountered and these should be segregated and ground separately. Western woods seem to require more grinding energy than do eastern woods.

J. C. Hunter spoke of common sense in pulpstone specifications. A pulpstone has a long life and is expensive and rapid changes are difficult to make. He felt that the most important factor in good pulp production was the choice of stone, and that the most important stone specification was the grit size. Each mill must make its own choice. Rather coarse grit stones probably can best make long fibrillated stock but they must be run dull and production suffers and energy costs are high. It was suggested that, although a mill at any one time might prefer a certain stone specification, one other dissimilar stone should be used to investigate possible improvements. In the discussion Mr. Hunter stated that laboratory and mill experiments had shown that a single grit size stone produced the same kind of pulp as did a combined grit stone of the same average grit size.

Following the talks on the above special subjects there was several discussions on the subject of the efficiency of grinding. Dr. Bersano felt that his process avoided the creation of the heat that accompanies ordinary grinding, and so should reach the optimum efficiency. Dr. Steenberg pointed out that the grinding action is a very random one and that this randomness is at the root of its inefficiency.

New Approach to Groundwood Evaluation

James d'A. Clark, consulting engineer, Victoria, B. C., stated that, a frame of reference comprising fundamental qualities of chemical pulps, has been applied with uniform success to groundwood during the past few years. The qualities are: 1) fiber slenderness, 2) length, 3) cohesiveness, 4) intrinsic strength, 5) flexibility when wet and 6) response to beating; a factor which does not apply to groundwood.

The various woods commonly used for pulp appear to have similar characteristics such as tensile strength and flexibility; consequently it is likely that for groundwood, only the first two factors above are important. Of these two, fiber slenderness appears by far to be the predominating one, since it affects the flexibility of the fibers, both dry and wet, by its fourth power, as well as having effects on other properties. Data are given to show that the strength properties of groundwoods, even when blended with sulphite pulp, derive almost wholly from their fines fraction, the nature of their longer or coarser fraction being of little importance. This is in contradistinction to chemical pulps, where the influence of their finest fractions is minor.

He said that if this approach is used to replace, or at least supplement, the complex freeness-burst-tear system, which is discussed but almost defies analysis, then the better understanding of the properties of groundwood, and the production of better pulp, becomes considerably simplified.

Bleaching with Sodium Borohydride

The authors[1] reported that the reductive bleaching of mechanical pulp with sodium borohydride was explored through a series of experiments which related brightness development and borohydride consumption with pH. temperature, chemical application and consistency.

Sodium borohydride was observed to produce a distinct bleaching effect on mechanical pulp. The data revealed that this was accomplished most effectively at 35°C. and at the pH levels developed by unbuffered borohydride systems. Higher pH levels, greater than 10, maintained in bleaching enhanced borohydride stability but retarded the rate of brightness advancement. At the lower pH's. 9 or less, both stability and brightness production were affected adversely.

About an 8 point brightness increase was secured with the application of 1.0 per cent sodium borohydride on the pulp weight basis. About 25 per cent of the applied chemical was consumed by the pulp; the remainder was lost through borohydride hydrolysis.

Spectral analysis of bleached handsheets revealed that sodium borohydride bleaching improves reflectance over the 300 to 600 mmu range and that its effects are different from those produced by the reducing action of zinc hydrosulfite. A spectrophotometric study on borohydride treated lignin (Indulin A) demonstrated the specificity of borohydride for the reduction of carbonyl groups.

[1]W. C. Mayer, State University College of Forestry at Syracuse University; Syracuse, N.Y. Present address: Personal Products Corp., Milltown, N.J. and C. P. Donofrio, State University College of Forestry at Syracuse University; Syracuse, N.Y.

Tailoring Groundwood for End Use

Moderator—E. P. Walsh: panel—S. R. Parsons, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.; W. J. Walker, Champion Paper & Fiber Co., Pasadena, Texas; C. A. Richardson, Blandin Paper Co., Grand Rapids, Michigan; R. W. Leaf, Shawano Paper Mills, Shawano, Wis.; J. A. McLean, Great Northern Paper Co., Millinocket, Me.; G. P. Brown, Koehring-Waterous Ltd., Brantford, Ont.

S. R. Parsons spoke of the requisites of groundwood for book papers, which demand bright clean pulp of good bulking properties and high ink absorbency. Rather fine grit (85) stones are used to grind spruce and poplar (separately). Quality control in his mill depends chiefly upon the freeness test and freenesses are held within rather narrow limits in the range of 50-70 ml. Canadian Standard for spruce pulp and 100-125 ml. for poplar pulp. Both woods yield acceptable pulps.

C. A. Richardson described pulps for supercalendered and catalogue papers. Here again brightness and cleanliness are most important. Carefully supervised wood cleaning is necessary to obtain pulp of the required cleanliness, and bleaching is required to obtain the required G.E. brightness of 70. Soft woods and poplar may be used if ground separately. Long slender fibers are desirable in this type of groundwood. The freeness ranges for spruce and poplar pulp are similar to those for book paper.

W. J. Walker discussed the requirements of groundwood pulp for use in magazine body stock which may contain 45-55 per cent groundwood and is then run at papermachine speeds in the 1500 ft./min. range. Such paper must be bright and clean and free from shives. Strict freeness limits are employed to keep pulp in the 75-85 ml. Canadian Standard freeness range. This pulp is blended with bleached kraft and oddly enough the mullen test can be used to determine its suitability for blending. Southern pine was used until two years ago, but at present cottonwood is ground and has been found to yield a superior pulp for this type of paper. Energy consumption is rather high at 100-125 h.p. days/ton and, since only two stones produce all the pulp, their surfaces must be carefully controlled.

R. W. Leaf pointed out that in making groundwood for toweling, softness, bulk, and absorbency were most important with strength a secondary item. Groundwood content of toweling runs to 50-80 per cent and depending somewhat on the shade, brightness is not too important, nor is the pulp required to be spotlessly clean as in book and magazine grades. Poplar yields very good toweling grade groundwood. In some tissue furnishes, a high percentage of chemical pulp provides ample strength and tissue groundwood must be free, a Canadian Standard freeness up to 180 ml. being acceptable. However, in some high groundwood tissue grades, stronger groundwood is required at somewhat lower freenesses. Once again poplar yields acceptable pulp.

J. A. McLean had the tremendous task of describing the proper pulp for newsprint manufacture. He reviewed briefly the history of speed increases on news machines from 1000 ft./min. in 1921 to the present plus 2000 ft./min. The ability to increase speed through this range cannot all be credited to better groundwood, but much of it can be credited to more uniform groundwood. The specifications for news grade groundwood is that it be a pulp which, when mixed with chemical pulp, provides good machine running. The physical characteristics may vary widely from mill to mill, but within one mill uniformity is demanded once the specifications have been set.

In a general discussion following Mr. McLean's talk, the relationship of wood moisture to good pulp was taken up. Some speakers described attempts to remoisten insect-killed or burned over wood, which were not too successful. Scandinavian experiments in rewetting spruce logs by spraying in ponds were unsuccessful as were some similar Canadian attempts. Only by total immersion for several months can dry spruce logs (about 20 per cent moisture) be remoistened to 40 per cent. However, such remoistening does restore the good grinding characteristics provided the wood had not become drier than about 16 per cent moisture. Soft woods at moistures above 40 per cent yield the best groundwoods, but much wood of

Habitant Dinner Center of Head Table: W. A. Hamblett, Tasmon, Pulp & Paper Co., New Zealand; L. R. Thiesmeyer, Pulp & Paper Research Institute of Canada (Guest Speaker) and J. K. Kirkpatrick, Bowaters Southern, Calhoun, Tenn.

lower moisture content must necessarily be used in mills.

In general, the correct groundwood for any one papermaking operation must be such that the papermaking operation can yield paper of the required specification and that the papermachine can be operated at high efficiency at ever increasing speeds. Obviously, hard and fast specifications for groundwood cannot be laid down when it is consumed in integrated mills where requirements are dynamic rather than static. Where groundwood is produced for papermaking operations which may occur weeks or months later, as in the export trade, there are different problems. Here, the production of uniform pulp as close as possible to customers' stated requirements can be the only rule.

Two-Stage Groundwood Bleaching

H. Jacques and R. W. Barton Finch, Pruyn and Company, Glens Falls, N. Y. stated that the possibilities of combining the peroxide and hydrosulphite processes for bleaching mechanical pulps have received some attention in the literature.

This paper presented the results obtained using the combination process to bleach groundwood pulp on a mill basis. In the particular application which was described, the combination process was used to meet brightness specifications during a period when the wood being processed resulted in pulp which was difficult to bleach with peroxide. The stock was made from a wood mixture containing 70 per cent spruce and 30 per cent balsam fir.

The process consisted of the following operations:

(a) Groundwood pulp from the decker storage chest was metered into the system and dewatered to 12 to 15 per cent on a vacuum thickener.

(b) Stock from the thickener was heated with steam to approximately 90° to 110°F. in a double-shaft mixer and treated with peroxide bleach liquor in a second mixer as required to give a pulp of about 71 brightness.

(c) The pulp was then dropped into a down-flow retention tower where from 2 to 4 hours of retention were obtained. The amount of retention time was controlled to give a residual of 10 per cent of the initial peroxide concentration.

(d) The stock was diluted to 4 to 5 per cent consistency. Sulphur dioxide was injected into the stock in this chest to give a pH level of 6. This reduced the residual peroxide and simultaneously lowered the pH of the pulp, preventing darkening of the stock by residual alkali from the bleach.

(e) The stock was then passed through a consistency regulator and into an agitated storage chest. A sodium hydrosulphite-sodium tripolyphosphate solution was then added.

(f) After a retention period of 15 to 30 minutes, depending upon bleached pulp demand, the stock was metered into the machine chest. Aeration caused by violent agitation in the machine chest oxidized any hydrosulphite remaining in the pulp, thus preventing further bleaching. The temperature of the pulp was from 90 to 95°F. in the hydrosulphite stage.

The process was operated continuously, unbleached pulp being supplied to the peroxide portion of the system and combination bleached pulp being continuously withdrawn from the hydrosulphite system.

The peroxide system contained all of the essential features for effective bleaching, i.e., medium consistency, thorough mixing of the bleaching chemicals and the pulp, adequate retention time and good control of the process. The hydrosulphite portion had provisions for rapid, thorough and air-free mixing and air-free retention, conditions which have been shown necessary for effective hydrosulphite bleaching. The retention time and temperature were, however, too low for the most economical operation (4).

The application of the two-stage peroxide-hydrosulphite process was found to produce brightness results which were approximately 3.5 points higher than those which could be obtained with peroxide alone. This is in agreement with the laboratory data presented in the literature. In addition, a final pulp brightness in the range of 75 to 74 was consistently obtained. The cost of bleaching with the two-stage process was found to be $1.63 per point of increase per ton of moisture-free pulp bleached, which was about 50 per cent higher than previously reported but it was lower than would have been the case if only a single stage had been used.

New and Different Grinding Method

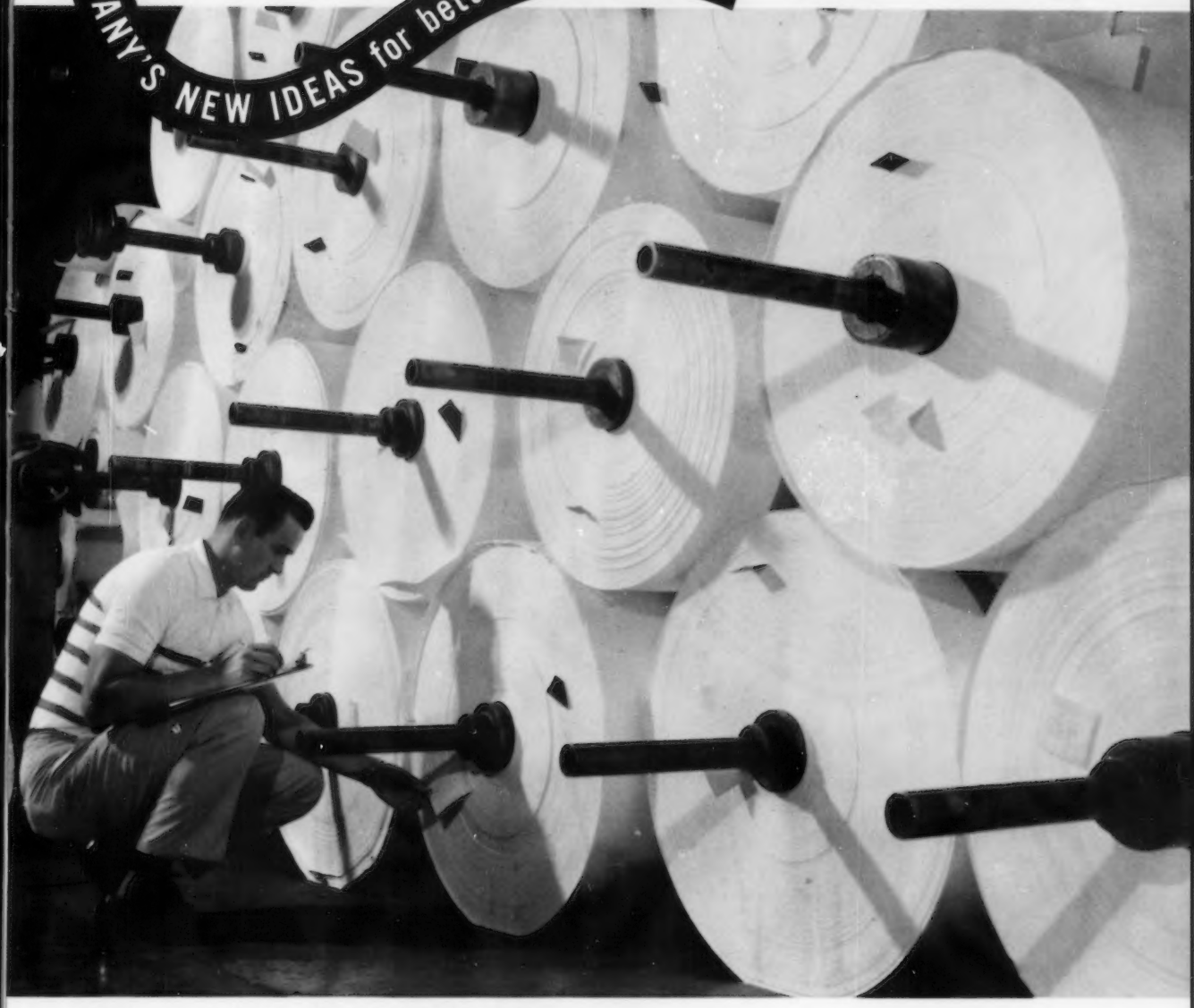
P. Barsano, Cartiere Burgo, Italy, described a new grinding method developed by his company. The basic difference in the new method is that the log is rotated and moved along the face of the stone as it is being ground. This is accomplished with conical shaped grinding wheels (stones). Dr. Bersano said that he believes that the rotational speed of the log must be constant and that this can be accomplished by variations in pressure. This does not have to be constant for all woods but can vary, depending on the hardness of it. The feeding and consequently the output varies due to the constant speed. The variations are at a minimum for dense wood and maximum for softer woods.

In the first stage of contact, the wood is compressed by a motion tending to increase the peripheral speed of the log. As the log progresses, it is still subjected to compression and the motion of the wheel tends to push it in an axial direction. The difference in the rotational speed of the log results in a grinding action in the layer of compressed wood in the grinding zone. The fibers are pulled away from the log at some angle to the axis. The grinding rate is governed by the feeding speed. At each revolution, the log is subjected to alternating compression and decompression in contacting the wheel and each of the supporting rolls. This, by itself, tends to loosen the bonds between fibers thus preventing breakage when finally pulled away. If the above conditions are maintained, the power consumption is extremely low approaching the theoretical minimum, as shown by recent tests in this country.

The main differences between this machine and a conventional grinder is that they do not have the heat effect from friction and hence obtain a substantial power saving as a consequence. But at the same time there is a strong oxidation of fibers for many reasons, such as solubility of air in cold water, ventilating effect of the wheel, all of which can be controlled.

He pointed out that the laboratory unit has been working satisfactorily for many months and it has proven to be a very valuable tool for reasearch work. The lower power required (motor 30 h.p.), the possibility of controlling or separating the pulp obtained from the external and internal rings of the log make it a very fine tool for laboratory groundwood research. For the time being, this is of prime importance said Dr. Bersano.

ALBANY'S NEW IDEAS for better papermaking



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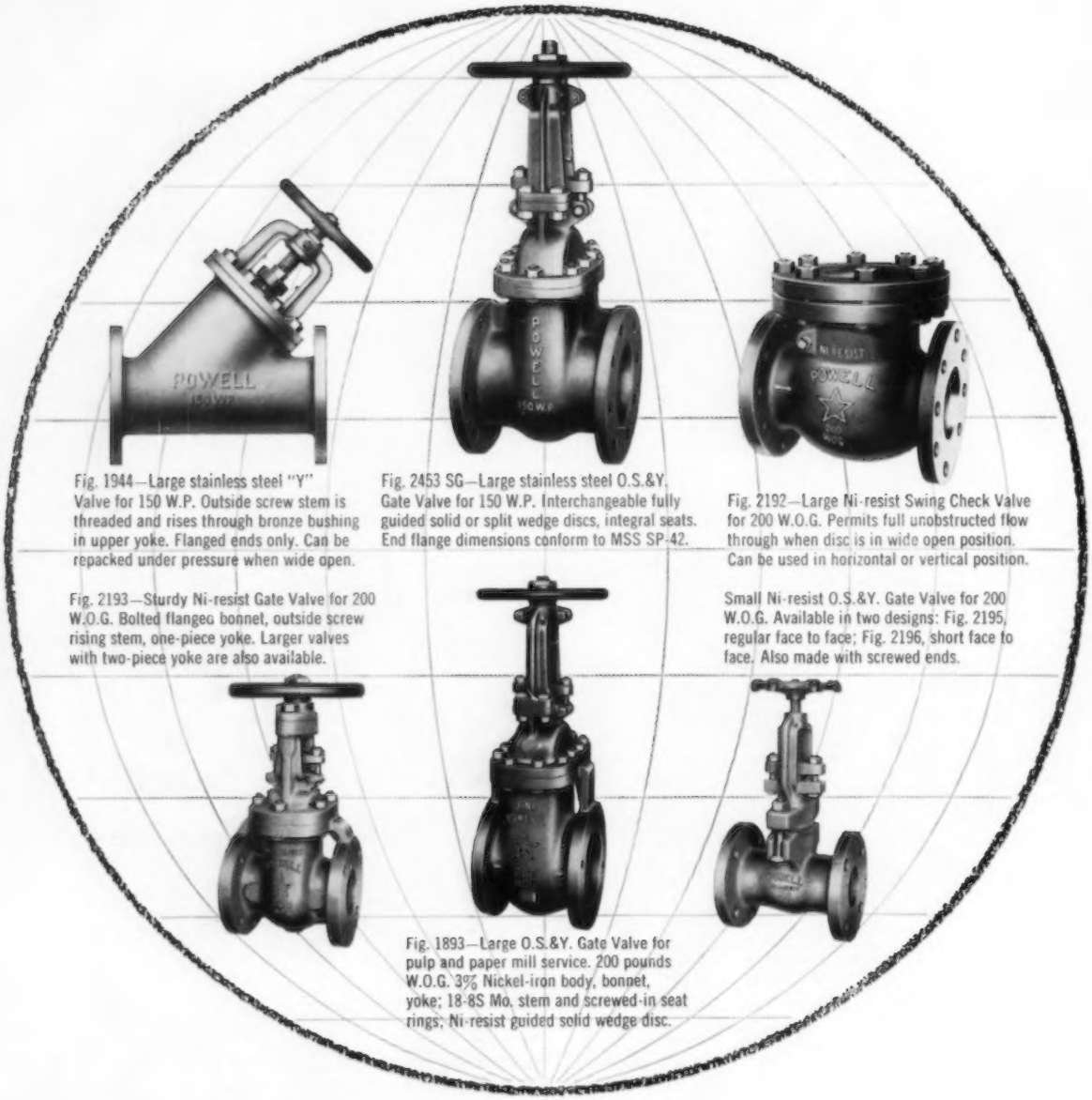

Fig. 1944—Large stainless steel "Y" Valve for 150 W.P. Outside screw stem is threaded and rises through bronze bushing in upper yoke. Flanged ends only. Can be repacked under pressure when wide open.

Fig. 2453 SG—Large stainless steel O.S.&Y. Gate Valve for 150 W.P. Interchangeable fully guided solid or split wedge discs, integral seats. End flange dimensions conform to MSS SP-42.

Fig. 2192—Large Ni-resist Swing Check Valve for 200 W.O.G. Permits full unobstructed flow through when disc is in wide open position. Can be used in horizontal or vertical position.

Fig. 2193—Sturdy Ni-resist Gate Valve for 200 W.O.G. Bolted flanged bonnet, outside screw rising stem, one-piece yoke. Larger valves with two-piece yoke are also available.

Small Ni-resist O.S.&Y. Gate Valve for 200 W.O.G. Available in two designs: Fig. 2195, regular face to face; Fig. 2196, short face to face. Also made with screwed ends.

Fig. 1893—Large O.S.&Y. Gate Valve for pulp and paper mill service. 200 pounds W.O.G. 3% Nickel-iron body, bonnet, yoke; 18-8S Mo. stem and screwed-in seat rings; Ni-resist guided solid wedge disc.

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Glomera Drying of Groundwood

The new pulp drying system at John Breakey Ltd.* was described in a paper by L. Gagnon, mill superintendent there, and by K. Stangle, D & S Engineering Ltd.

Drying is performed in three stages. The equipment employed consists of an oil fired furnace, a Novorotor double disk fluffer receiving pulp at 30 per cent air-dry consistency. Through the fluffer the pulp is brought in contact with hot gases and in conjunction with the discharge fan, the fluffer acts as a first drying stage. A cyclone separates the evaporated water from the pulp and completes the first drying stage. The pulp then enters the second stream of hot gases and is carried through a type 1500 Glomera flash dryer, separated from the steam and gases into a cyclone, and is then introduced into the third stage dryer which is a duplicate of the second. The drying then completed, the pulp enters the compressor through a plexiglass chute which gives the operator an opportunity to observe the quantity and condition of the pulp entering the compressor.

The pulp compressor built by Canadian Sumner Iron Works Ltd. is a piston type compressor fitted with extra large flywheel, adjustable compression box and variable speed drive. It has a speed range of 14 to 45 strokes per minute which represents capacities of 30 to 90 air-dry tons per day.

The dry pulp is discharged in sheets of 24″ x 12″ x 1″. The sheets are made into bales on a modified wet pulp hydraulic baler. The bales are 24″ x 36″ x 40″ and weigh 550 lbs. All the characteristics of the pulp are retained in this drying process. The fluff dried pulp is remarkable for the ease of repulping, the resistance to molding and freezing. In sheet form, it handles relatively well and is most convenient in preparing paper machine furnish, reported the authors.

*Principles of this system were described in the July 8, 1957 issue of *Paper Trade Journal*.

Advantages of Individual Grinder Pit Testing

Southland Paper Mills system of grinder pit testing was outlined by Fred W. Bishop, technical director.

Southland Paper Mills started up experimentally with practically no background of experience in the production of newsprint quality groundwood from Southern pine he pointed out. With a limited number of stones it was necessary that drastic changes be made on individual stones to study the effect on pulp quality and to control the quality on the blend of pulps from all stones. It was also necessary to evaluate stones of various grit, hardness, composition and the effect of various burrs for optimum quality. It was essential to evolve a sampling and testing procedure in which the operators could have some reliance regarding the quality of stock produced from each grinder pit.

It was established by this early work that for the purpose of this mill a composite sample representing seven independent samplings, 30 minutes apart, was generally representative of the pulp being produced by that stone under a given set of operating conditions.

This system of individual stone analysis has been of particular advantage at Southland in the evaluation of the Norton G-bond stones. Two of these stones were installed on one line a number of years ago and it soon became apparent that the pulp from these was being produced at a higher production rate, lower kw.-hr. per ton and surprisingly enough, said Mr. Bishop at a lower freeness than pulp produced by conventional stones.

All of this sampling, testing and data handling appears to be laborious and time consuming, but once the routine is established the compilations are quite simple. The proper association of this data with blue glass examination of pulp from the individual stones is a very good method for evaluating stone face condition. All of this data reflects the operator's efforts to maintain stone operating standards and pulp quality, concluded the speaker.

High Consistency Screening

High consistency screening of groundwood has been carried out on a production basis at the East Millinocket Mill of the Great Northern Paper Company for a period of four months reported A. E. Dentremont, control supt. and R. S. Swenson, pulp mill process engineer. A 36-P selectifier screen, manufactured by the Black-Clawson Co., was used at an average capacity of 180 tons per day accepted stock screened and deckered at 1.50 per cent bone dry consistency. Rejects were held at 10 per cent based on the inlet stock. Development work, optimum running conditions as well as operational problems were covered in this paper.

The authors stated they were still experimenting with high consistency screening and have before them a program of variables to be worked out. However, on the basis of the tests they found that there is a great deal of hope for high consistency screening on a continuous production basis. The chemi-groundwood pulp screened well at upwards of 220 tons per day with no operating difficulties encountered. Groundwood screening at 180 tons per day seems to be entirely feasible for newsprint. On a decker normally rated at 125 tons per day, they have been able to operate at 200 tons per day without any difficulty. Because of its high production, the horsepower requirements per ton are extremely low in this type of operation. They feel that additional work is needed to reduce the amount of accepted fiber in the rejects. This is one of the main drawbacks faced at the present time. The passage of long thin fiber bundles through the screen plate also presents a problem.

Screening efficiency has not been as good as with the present type of screen in the mill and this makes the paper machine screens work harder.

They said it has been shown, in agreement with current thinking, that the smaller screen plate hole does not necessarily give cleaner pulp. The hydraulic rate of the screen plus inlet consistency as well as per cent rejects all contribute to the end results.

TABLE I

OPERATING DATA

Plate Perforations	0.062 inch
Hub Speed	300 r.p.m.
Impeller Clearance	0.055 inch
Stock	Groundwood, Bull Screened, 155°F

	Inlet	Accepted	Rejected
Flow	2318 g.p.m.	2150 g.p.m.	168 g.p.m.
Consistency O.D.	1.53%	1.41%	2.08%
Tons per day	204	183	21
Freeness —C.S.	—	105	238

Percent Rejects On Inlet Basis	10.3%
Horse Power—Instantaneous	59 H.P.
Inlet Pressure	18.5 p.s.i.
Differential Pressure Across Plate	2.5 p.s.i.
Deckered Consistency O.D. (Couched)	8.60%
" " " (Sluiced)	3.00%
Deckered Stock Freeness	96

Coarse Grinding Followed By Refining

F. S. Hoholik, mill manager, Manistique Pulp & Paper Company, Manistique, Michigan reported that in conjunction with plans for a speed up of the paper machine at his mill, the need for approximately 35 tons per day of additional groundwood production became apparent. After consideration of various alternatives for providing more groundwood capacity, the possibility of grinding coarse with high production per grinder, followed by finishing the pulp in double disk refiners, offered a low capital cost means of achieving this objective.

Satisfactory quality and operating results are reported by the author from this first commercial installation, having as its purpose to obtain a major increment in groundwood production based on the theory of high capacity, low energy grinding followed by refining of the grinder output.

Groundwood capacity of this mill under average water conditions has been increased by 50 to 75 per cent depending on the end product groundwood quality required for various paper grades being produced. Output capacity of individual grinders has likewise increased by a similar percentage and this high freeness, relatively coarse grinder output is double disk refined, after bull screening, to provide finished groundwood having the freeness and strength characteristics desired.

The system provides flexibility for immediate change of groundwood quality and freeness by adjustment of refiner throughput or plate settings. In this manner, the several grades of groundwood required for different paper machine orders can be produced without upsetting grinder room operation and eliminating necessity of frequent stone sharpening.

Total accumulative power consumption, grinders plus refiners, required to produce the finished product is equivalent to, or possibly less than the power requirements using the grinders only. The advantage of a specially chosen, coarse grit stone for the production of coarse groundwood having optimum strength potential has been separately investigated in this installation.

Based on a limited period of operation, it has been established in a commercial installation that the coarse grinding followed by refining procedure provides a practical and flexible means of increasing groundwood production by as much as 100 per cent in an existing groundwood mill without the addition of more grinders. Pulp produced by the system described above has run well on the paper machine and has had no adverse effect either on machine running conditions or paper quality.

It has also proven possible to double the production per stone at half the normal power input and finish of the resultant coarse groundwood to an acceptable pulp in the double disk refiners. This will permit an existing groundwood mill to double its production without installing additional grinders.

Flexibility for immediate adjustment of pulp freeness and quality is provided by the refiners.

While Mr. Hoholik said that the data he presented does not necessarily represent the ultimate results that may be obtained, all grades of pulp produced by the described system, have run well on the paper machine with no adverse affect on machine running conditions or paper quality.

Effect of Quality on Wet End Efficiency

Guenter Herwig, development engineer, Finch, Pruyn and Company, Inc., Glens Falls, N. Y. reported that the German "Rapid Koethen" sheet mould was used to determine primary and secondary drainage characteristics of groundwood pulps simultaneously with the preparation of test strips for wet strength tests. Multiple correlation was used on 6 months' control data to determine the most significent of the three variables—Drainage Effect 1, Drainage Effect 2, and Initial Wet Strength—for paper machine wet-end efficiency. The significance of the isolated effects on efficiency due to each variable was better than 99 per cent.

Initial wet strength proved to be the most significant variable. Linear equations relating the three variables to paper machine wet-end performance predicted efficiency gains or loses due to speed changes within ± 3.3 per cent, efficiency losses caused by wet-end breaks within ± 4.1 per cent, and overall efficiency within ± 7.2 per cent in 19 out of 20 cases. The method of determining Drainage Effect 1, Drainage Effect 2, and Wet Strength has proved its value for groundwood pulp quality control.

Drying Groundwood at Sheet Harbour

The Halifax Power & Pulp Co., groundwood drying system* was described by R. M. Sternberger. He said that they had retained the Kamyr wet machines to accomplish the mechanical dewatering action added cutters and slitters so that the pulp discharges, in small sheets of about 8 x 10 inches, into a horizontal screw conveyor. Besides moving the pulp, the screw conveyor has the additional function of breaking up the sheets. A cleated belt conveyor then carries the pulp to a fluffer.

The fluffer is a small, non-precision, single disk refiner equipped with devil tooth plates. It is fed by a screw-feeder discharging directly into the eye of the disk. The teeth of the plates intermesh and fiberize the pulp by impact. No refining action takes place.

The dryer is a direct-fired, rotating drum of the kind used for agricultural purposes for many years. The pulp falls from the fluffer into the stream of hot gases at the juncture between the furnace and the drum. At the far end, a fan unit pulls the air through the furnace and the pulp and heated gases through the drum. The fan then blows the pulp and gases to a large cycline where the pulp is separated from the furnace gases and moist air. This cyclone discharges into a hopper where the pulp is picked up by a second fan and conveyed through a blow-pipe to the baler.

A two-story double box baler operates with 3—14 inch single acting rams. A tramper packs the pulp into the bin that is filling. The pulp is compressed from the bottom and a bale formed. The bale is extracted by opening doors at the top of the bin. The baler operates in a 5-minute cycle, providing a 740-pound bale.

While the bale as a whole has good mechanical properties, unprotected corners tend to crumble off with heavy handling. As all of the mill's shipments are by water, it is necessary to wrap the bales.

Besides the obvious advantage of a freight saving, this dryer has permitted shipping to more distant markets and

*The basic system was described in an article in the March 18, 1957 issue of *Paper Trade Journal.*

shipping to and storing in warm climates.

Besides the advantages of reduced handling which redounds to the benefit of both Halifax and its customers, the latter also enjoy a real benefit in the friability of this pulp. It seems to disperse more readily than wet laps.

In spite of slightly increased manufacturing costs, Mr. Sternberger said the company is enjoying real economies with this system.

Powell River's New Groundwood Mill

James C. Hunter, Powell River Co., Powell River, B.C., described the new woodhandling system and groundwood mill there. The detailed, descriptive nature of the paper does not permit its summary here. Much of the information in it appeared in the April 22 and November 18, 1957 issues of *Paper Trade Journal*.

Cause of Wide, Uncontrolled Freeness Variation

"The existence of uncontrolled freeness variations in grinder product has long been recognized, but their wide scope under some circumstances is not generally appreciated" said L. R. Beath, Price Bros. & Co. Results of an investigation into such variations in continuous grinders were given by the author. Freenesses ranging from 40 to 250 were found in the product from a single stone over a six hours period during which no deliberate change of grinder operating conditions was made. The major cause of these large variations was found to be rather small changes in the angle between the axes of the logs being ground and the surface of the stone. It was found that a 10° decrease in angle might cause a six-fold increase in freeness. This angle effect has important implications in the commercial application and the fundamental theories of groundwood production.

Three factors account for the vertical angle of the wood in the magazines of continuous grinders stated Mr. Beath. These are:

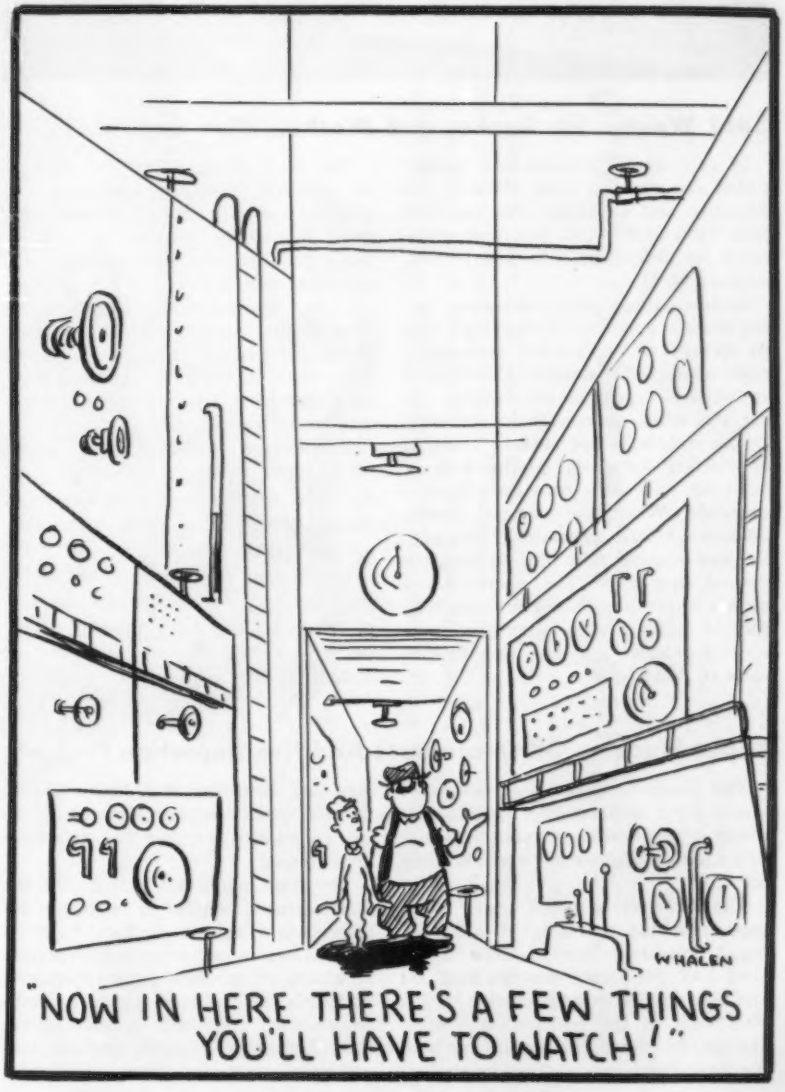
1)—The natural taper of the tree.

2)—The several stages of wood conveyors are processes which have varying degrees of bias in selecting whether given logs shall finally be presented with their larger or with their smaller ends closer to the magazine. The man loading the magazine has an all-too-human bias in favor of putting his picaroon into the nearer end of a log. A bias in the system which brings wood to the loader with a majority of the smaller ends more readily accessible to him will result in a majority of small ends at one side of the grinder, and a cumulative angling of the wood charge.

3)—The wood fed into a continuous grinder magazine forms, effectively, a continuous, unbroken column over the hours and days. Any small persistent bias in the large-end-small end distribution of the wood load will accumulate to the point where the loader finds it intolerable and takes deliberate, corrective action.

The range of freeness variation which may result from a fairly wide range of wood angle, is much larger than can readily be counterbalanced by use of the usual grinder controls. When angle is high, and freeness much too low, it is theoretically possible to raise freeness as desired by grinding faster. Actually the limits of wood feeding force available, and the maximum power load can be drawn, severely limit the scope of this remedy.

The author said, "the most practical corrective is better loading of the magazine, obtainable through operator training in the importance of careful loading, plus good supervision. Mechanical magazine loading systems, more of which will be seen in the future, will require randomizing of the positions of the large and small ends of the logs. This may be had by end-for-end reversal of the position of every second log just prior to loading."



Spot Welder for Decker and Washer Wire Repair

A new, highly efficient spot welder, called the "Impco Face Welder" for applying and repairing stainless steel face wires and bands, has been developed by Improved Machinery Inc., Nashua, N. H.

Simple settings and an automatic timing feature make the welder very easy to operate. It incorporates extra-heavy relay contacts, an accurate timer which automatically governs the welding cycle and silver plated contact surfaces.

The welder is operated by pressing its welding tip down on the wire or band lap joint as it rests on a bottom electrode. When the correct, preset, amount of hand-pressure is reached, the unit automatically fires, making the desired spot-weld. The operator has merely to position the welder, and trigger the welding cycle with hand-pressure to produce a strong, neat looking seam or band joint.

The unit is also readily adaptable to repairing damaged face wires. A smaller, specially shaped bottom electrode is provided with the welder, for use in patching where the standard bottom electrode is too large. A patch is cut to the proper shape, inserted through the break or tear, and quickly welded in place. The welder also has been used by mills for welding light gage metals such as repairing perforated screen plates.

Requiring a minimum power supply of 95 volts during its welding cycle, the unit contains a volt meter which permits the operator to check the voltage during operation.

Instructions for preparing and applying face wire to cylinders is outlined in Impco bulletin J3-7. Further details on the welder itself are contained in bulletin J3-8.

Paper Machine Oil Overcomes Additive Depletion Problem

The Texas Company has developed a new paper machine bearing lubricant which is reported to successfully maintain additive effectiveness and filter bag life.

The new oil was first tested on a paper machine operating at 125 p.s.i. steam pressure where moisture conditions had previously contaminated oil and contributed to deterioration of the filter bags in the purification system. During the 16 months service test with the new lubricant, a Texaco spokesman said, depletion of the oil additives through water contamination was virtually eliminated and filter bag deterioration stopped.

The firm points out that it was the first lubricant supplier to introduce detergent dispersant oils to handle the increased bearing pressures and dryer temperatures of modern paper machines. Such oils have proved highly resistant to oxidation and water contamination, have high film strength, provide rust protection and good foam resistance.

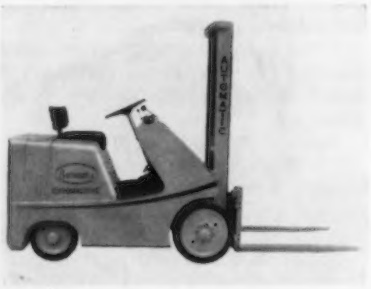
While maintaining the good characteristics of these earlier oils, 790 Paper Machine Oil HD Improved has been specifically developed to overcome the problem of additive depletion and filter bag deterioration that sometimes arises in the lubrication of paper machines.

Gas Powered Electric Driven Fork Trucks

The Automatic Transportation Co., 149 West 87 Street, Chicago, Ill., has developed a new line of Dynamotive gas powered, electric driven fork lift trucks. The Dynamotive is said to offer the ultimate in high operating efficiency, low cost of operation and maximum safety.

The gas engine on the new trucks transmits its power through a specially designed variable voltage generator to a matched d.c. series wound electric drive motor, forming a synchronized power package which supplies instant power at the touch of the accelerator. This type of drive is said to enable the gas engine to operate at its most efficient speed at all times, which results in fuel savings.

Capacities of the new line of Dynamotives range from 4,000 to 10,000 pounds with lifting heights to suit all applications.



New Casein Products

Two new casein products have been announced by the Borden Chemical Company.

One is a water-soluble casein, known as Borden's Protovac PV-424. It was designed especially for use as a latex stabilizer. It also can be used effectively in grease-proof coatings, as an adhesive, and as a pigment dispersant and thickener in paints. Processors without "cooking" facilities will find the product particularly desirable because it can be prepared at room temperature with either a high-speed mixer or a slow-speed paddle-type mixer. The dry granular product has low alkali requirement, is low foaming, and has high adhesive strength.

The other product, Borden's Special 30-Mesh Argentine Casein, is par-

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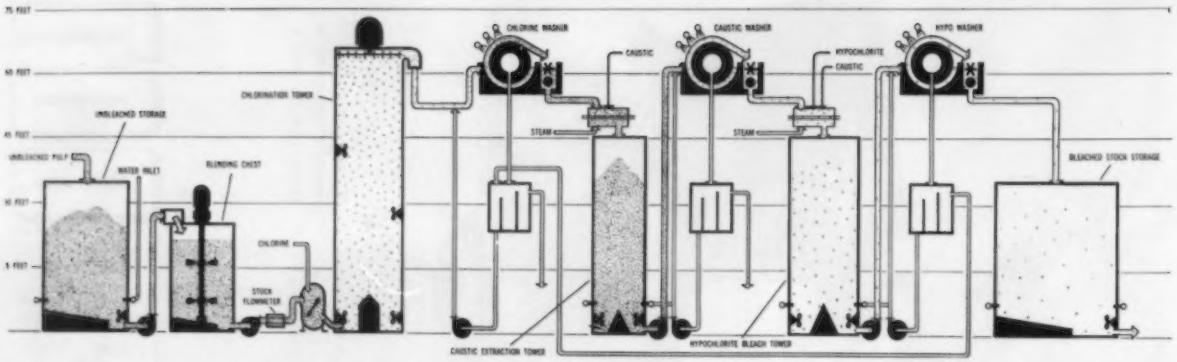

ticularly suited for paper coating and other uses demanding a high-quality casein. Prepared in a recently modernized plant in Buenos Aires, this lactic casein is specially selected, blended, and processed to provide a high-quality product at low cost. New equipment, incorporating an elaborate control system, assures a casein free of dirt and of a consistent high grade. In addition, it has an especially low alkali requirement.

Data sheets are available from the Borden Chemical Co., Casein Dept., 350 Madison Ave., New York, N. Y.

Fork Truck Uses Hydraulic Motors

A new method of power transmission based on the principle of hydrostatics is announced by Towmotor Corp. Cleveland, Ohio. Called Towmostatic Drive, it enables operators to control all forward and reverse movements with a treadle-type pedal operated by the left foot. Pressure on the pedal by the operators toe moves the truck forward, while gentle heel pressure actuates reverse travel.

The drive provides instantaneous power application while eliminating much of the traditional mechanism formerly required to operate fork lift trucks. Maintenance is significantly reduced with the elimination of conventional fork truck clutch assemblies, transmissions, and drivelines.

In the new drive, two constant displacement pumps driven by the conventional gasoline engine provide a flow of hydraulic oil under pressure to two positive displacement piston-type motors which in turn furnish power to each of the drive wheels. A single oil reservoir offers ample capacity for the transmission requirements, and all other hydraulic functions of the lift truck.

The two hydraulic pumps, powered by the engine, also furnish the hydraulic power for lifting and tilting. The driver now uses his hands only for steering and controlling the lifting and tilting levers, reducing hand movement to a minimum.

Continuous Pulp Bleaching System

Dorr-Oliver Inc., Stamford, Conn., has a new continuous system for bleaching pulps produced by chemical, semichemical and mechanical processes. Equipment components are characterized by simple, rugged construction. Heart of the system is the Oliver vacuum bleach washer, in wide use throughout the pulp industry for many years. New designs are said to insure a minimum of maintenance and offer thorough washing and trouble-free operation on chlorine, caustic, hypochlorite and other chemical service.

The system is available with a complete line of stock chest agitators which feature adjustable pitch propellers designed for most efficient power use. High density stock mixers are available with either single or double shafts of unique engineering design. The shaft rotating assembly comprises a series of heavy cast spiders with alternate mixing pins and propeller vanes cast integrally with the hub. For maximum strength, diameters of pins and vanes are tapered from base to tip. A compact, integral check valve in the steam inlet port prevents pulp back-up when the system is shut down.

The Dorr-Oliver bleach tower dilution nozzles, mounted in the base of high density down-flow towers, are regulated by a single control. Streamlined nozzle valves with chatter-free throttling characteristics are accurately positioned to assure uniform delivery or complete closure to prevent plugging of the nozzle during temporary shutdown.

High density storage tower mining nozzles are of a novel, oscillating design. Spring-loaded check valves automatically prevent pulp backup and the two-jet oscillating barrel assures complete discharge of stock from the tower with minimum mining water. The rotary motion barrel is designed with large bearing surfaces and conventional ring packing.

The continuous pulp bleaching systems are designed and engineered for each individual mill. A wide choice of materials of construction provides necessary corrosion resistance where required and flexible fabricated design allows ideal location of components at each installation. Initial system operation is supervised by experienced bleach process engineers.

Continuous Freeness Recorder

A continuous freeness recorder has been developed for recording the drainage rates of stock taken from paper or board machine systems at any desired point. The recorded values are automatically corrected for variations in temperature and stock concentration.

The stock to be tested is diluted at the unit to approximately 0.8 per cent. It then passes along a delivery channel where variations in concentration are sensed electronically by the rise and fall of a float actuated core in a differential transformer. Stock temperature is also measured electronically in the channel. Samples of the diluted stock are fed into a one-litre capacity vessel with a bottom consisting of a perforated freeness plate. The base of the pot is sealed for a short time before the stock is allowed to drain freely for a pre-determined period. The pot is then emptied, washed, and recharged for the next test.

Drainage water is collected in a measuring tank and a d.c. voltage proportional to volume is derived electronically. This volume is a measure of freeness and it is influenced by variations in stock concentration and temperature.

The measuring systems for stock concentration and temperature derive d.c. voltages of amplitude and polarity which are dependent upon the degree and direction of changes from nominated standards in either value. These voltages are automatically maintained in the appropriate proportion to the freeness value and are combined with the vol-

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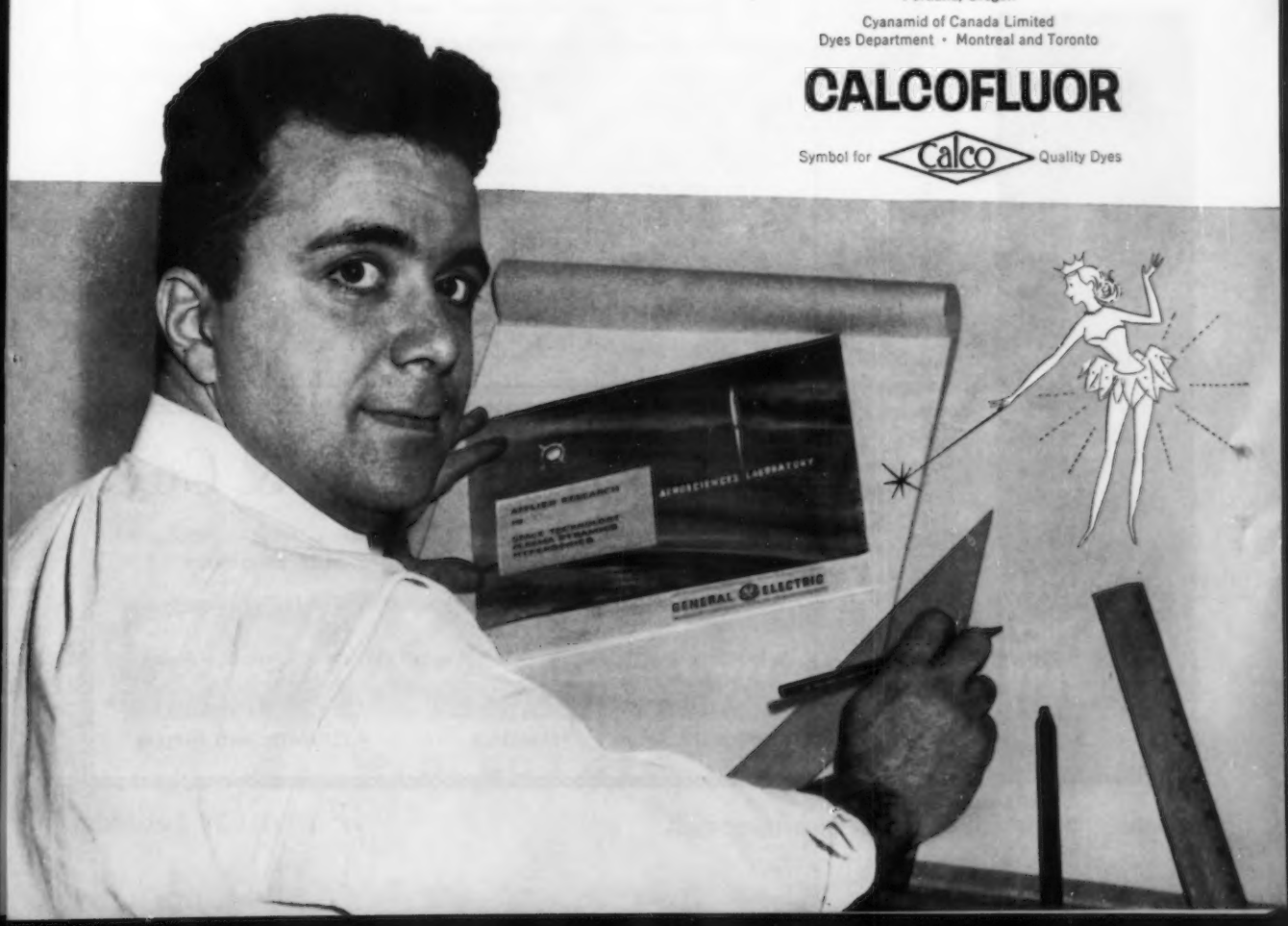
Symbol for Calco Quality Dyes



tage derived from the drainage rate volume. The mean peak values from each test which takes one minute are presented as a continuous recording.

Developed by Australian Paper Manufacturers Ltd., P.O. Box 1643 Melbourne, Australia, the prototype of this instrument has been in operation on a kraft machine for over a year.

Shaft Mounted Speed Reducers

Link-Belt Co. has introduced a new line of shaft-mounted speed reducers, designed for a variety of speed reduction needs. The units are available as single reduction drives in six sizes with nominal ratios of 5 to 1 and capacities up to 50 horsepower, and as double reduction drives in seven sizes with nominal ratios of 15 to 1 and capacities up to 40 horsepower.

The new speed reducers can be mounted at angular as well as horizontal positions by using either tie rod or foot mountings. Positive lubrication is constantly assured by an oil spray generated automatically through gear rotation, regardless of the position in which the reducer is mounted. Precision housings and bearing seals keep oil in and dirt out.

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

1958	Aug. 16 90.5	Aug. 23 91.1	Aug. 30 88.7	Sept. 6 70.1r	Sept. 13 91.6
1957	Aug. 17 91.6	Aug. 24 92.2	Aug. 31 89.6	Sept. 7 71.3	Sept. 14 91.5

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1957	94.2	97.0	97.1	94.0	94.6	93.3	75.6	90.7	86.0	93.0	90.7	81.5	90.9
1958	86.9	89.5	89.5	88.1	86.4‡	86.2‡	76.0‡	89.8‡	—	—	—	—	—

‡Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1951	1952	1953	1954	1955	1956	1957	1958
Year to Date	99.2	90.4	92.1	91.2	94.4	98.2	91.1	85.6
Year Average	98.0	88.6	92.3	91.6	94.0	97.9	90.9	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

1958	Aug. 16 93	Aug. 23 92	Aug. 30 95	Sept. 6 73	Sept. 13 97
1957	Aug. 17 94	Aug. 24 95	Aug. 31 95	Sept. 7 72	Sept. 14 98

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1958	80	86	88	84	84	86	76	93	—	—	—	—	—
1957	91	94	94	92	93	91	72	94	91	97	92	79	90

† *Percents of operation based on "Inch-Hours" reported on a 6-day basis.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING Sept. 13, 1958	LAST WEEK ENDING Sept. 6, 1958	CUMULATIVE TO DATE Jan. 1 to Sept. 13, 1958
% Activity	97%	73%	85%
	Tons	*Tons*	*Tons*
Total Production	305,978	218,998	9,578,821
Liner	104,891	62,450	3,158,861
Corrugating Material	47,459	36,317	1,439,234
Chip & Filler Board	5,422	5,104	176,382
Total Containerboard	157,772	103,871	4,774,477
Folding	59,684	43,833	1,860,974
Set-Up	13,239	10,415	384,041
Special Food Board	22,816	18,528	904,320
Other	52,467	42,351	1,655,009
Total Boxboard	148,206	115,127	4,804,344
Total Orders	*Tons*	*Tons*	*Tons*
Received	310,445	315,720	
Unfilled End of Week	509,651	508,828	

always in the market

baltimore
chicago
detroit
jersey city
kalamazoo
los angeles
oakland
philadelphia

graders and packers of waste paper

PIONEER PAPER STOCK COMPANY

Alvin H. Johnson & Co.

INCORPORATED

Consulting and Designing Paper Mill Engineers

415 LEXINGTON AVENUE NEW YORK 17, N. Y.

PAPER MILL DESIGN PROCESS ENGINEERING POWER PLANTS

STRUCTURAL AND ARCHITECTURAL DESIGN

REPORTS APPRAISALS ESTIMATES AND SURVEYS

Thiele Kaolin

SUPERIOR CLAYS

for FILLING or PAPER COATING

- **Controlled Particle Size** • **Excellent Color**
- **Standardized Low Viscosity** • **High Brightness**

Thiele Water-Washed Clays are mined from vast holdings in the heart of Georgia's clay belt, carefully tested and controlled while being processed at Thiele's modern plant. Two spray drying plants assure coating clays that will provide EASIER MAKE-DOWN—IMPROVED HANDLING—LOWER MOISTURE CONTENT—MORE UNIFORMITY.

Illustrations show particle size testing and core testing—in Thiele laboratory.

Write for full information and sample of Thiele Kaolin Coating or Filler Clay for your particular use.

Thiele Kaolin Company

P. O. BOX 270 • SANDERSVILLE, GA.

Modern Methods of Mechanical Pulp Manufacture

A new book, published early in September, comprehensively covers all aspects of groundwood pulp production. The author, K. H. Klemm, has a broad knowledge of groundwood manufacturing methods and has been associated with groundwood mills on both sides of the Atlantic.

This new text is offered at a special pre-publication price of $4.00, cash with order, until October 3.

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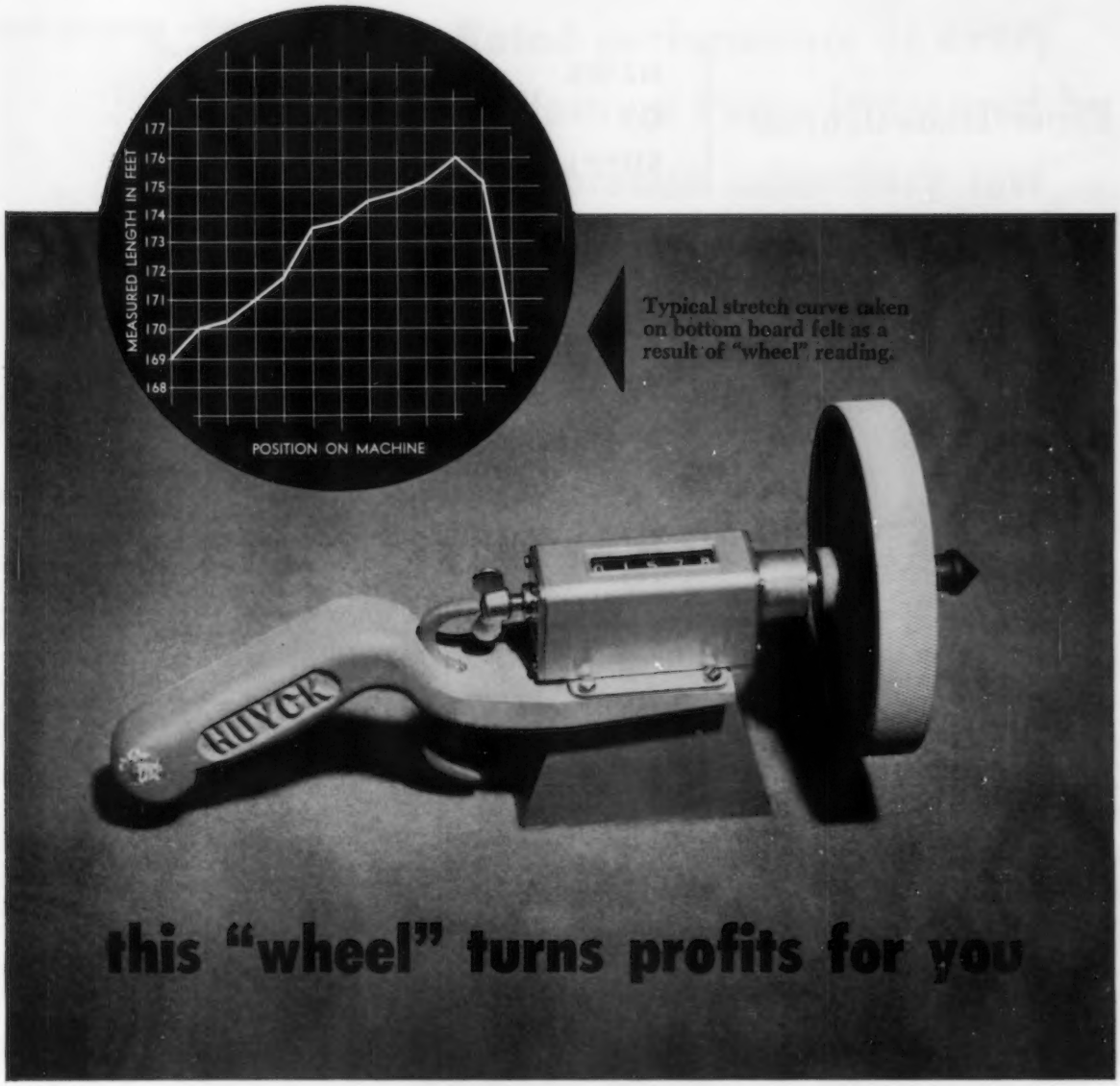
Lockwood Trade Journal Co. **49 West 45th Street** **New York 36, N. Y.**



Pictured above is the new '59 model Kenwood Felt Measuring Wheel used by Huyck Sales and Field Service Engineers to (1) determine whether felts are running at proper operating tension and (2) gather vital data bearing on felt design and service life. Just one of many new precision tools provided *only* by Huyck, the "wheel" shortens the distance to better production of better paper at lower felt cost per ton.

HUYCK FELTS

Huyck Felt Co.,
Rensselaer, N. Y.;
Aliceville, Ala.;
Division of F. C. Huyck & Sons.
In Canada: Kenwood Mills Ltd.,
Arnprior, Ontario

NEW HUYCK FELTS ★ INDUSTRIAL FABRICS

FIRST IN QUALITY • FIRST IN SERVICE SINCE 1870

Paper Machinery Builders Double Plant Capacity

Layton-Greenfield, Inc., custom designers and builders of paper mill machinery, are currently in the midst of a major plant expansion program. Additional facilities recently acquired in Coatesville, Pa. have more than doubled the capacity of their present plant. The new shop is devoted entirely to manufacturing, and augments Layton-Greenfield's present production facilities on Reservoir Road. The executive, sales, engineering and purchasing staffs will continue to operate at the latter location, as before.

E. L. Vogt

E. G. Sielewicz

Huyck Felt Co., Rensselaer, N. Y., has appointed Eugene L. Vogt as felt sales engineer for Illinois, Kansas, Missouri, Oklahoma and parts of Indiana, Iowa and Wisconsin; and Edwin G. Sielewicz as field service engineer for Michigan and parts of Illinois, Indiana, Ohio and Pennsylvania.

Douglas Robbins & Co., Lockport, Ill., has been named sales representatives for Rader high pressure conveying equipment, according to Joseph Keys, president of Rader Pneumatics, Inc., of Portland, Oregon.

Rader's Lockport office, which will serve the six state area of Minnesota, Wisconsin, Michigan, Ohio, Indiana, and Illinois, is the second new Rader branch to be opened in the last two months. Announcement was made last month of the formation of Rader Pneumatics Inc. of Tennessee with offices in Memphis to serve the Southern states.

Bolton-Emerson has been appointed sales agent for TAPPI Standard laboratory machines produced by the Hermann Mfg. Co., Lancaster, Ohio.

In addition to the TAPPI disintegrator, TAPPI sheet making machine and TAPPI pump and press, Bolton-Emerson will handle the Hermann automatic press and the improved Kollergang beater used in precision pulp testing. Parts for these machines will also be available.

Warren Pumps Inc. has appointed Edward H. Elliott industrial sales representative in the Philadelphia area. He has been a manufacturers representative in the Philadelphia area since 1954, and recently moved his headquarters to 419 Wyndon Road, Ambler, Pa., telephone MItchell 6-7321. His territory includes Pennsylvania east of and including Potter, Clinton, Union, Snyder, Juniata, and Franklin Counties; New Jersey south of and including Mercer and Ocean Counties; and Delaware.

Oakite Products announces that George M. Seib, formerly secretary of Oakite, has been appointed vice president of the company, which manufactures industrial cleaning and metal treating compounds. Erwin H. Steif, who was Mr. Seib's assistant, has been promoted to the post of secretary.

Appleton Machine Co., Appleton, Wis., is observing its 75th anniversary with a year-long program of special events and promotional activities. Theme of the diamond jubilee celebration, which will continue through June, 1959, is "75 Years of Progress Through Specialization".

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Steam, Electrical, Water, Waste Reports, Appraisals
MONTGOMERY BLDG. SPARTANBURG, S.C.
NEW YORK BOSTON

J. Richter

K. Dahl

O. A. Laakso

AB Kamyr, Karlstad, Sweden, has decided to form a special division within the organization which will be responsible for furthering and coordinating all technical developments of AB Kamyr and its many subsidiaries and affiliated companies.

Johan Richter, president of AB Kamyr, has expressed the desire to be relieved of his commercial and administrative duties in order to devote all his time to development work, and he will therefore take charge of the new division.

Knut Dahl, president of Kamyr, Inc., Hudson Falls, N. Y., will succeed Mr. Richter as president of AB Kamyr, Karlstad, and will return to Europe this fall.

Oliver A. Laakso, formerly of H. A. Simons Ltd., Vancouver, B.C., will take over as president of Kamyr, Inc., Hudson Falls, N. Y.

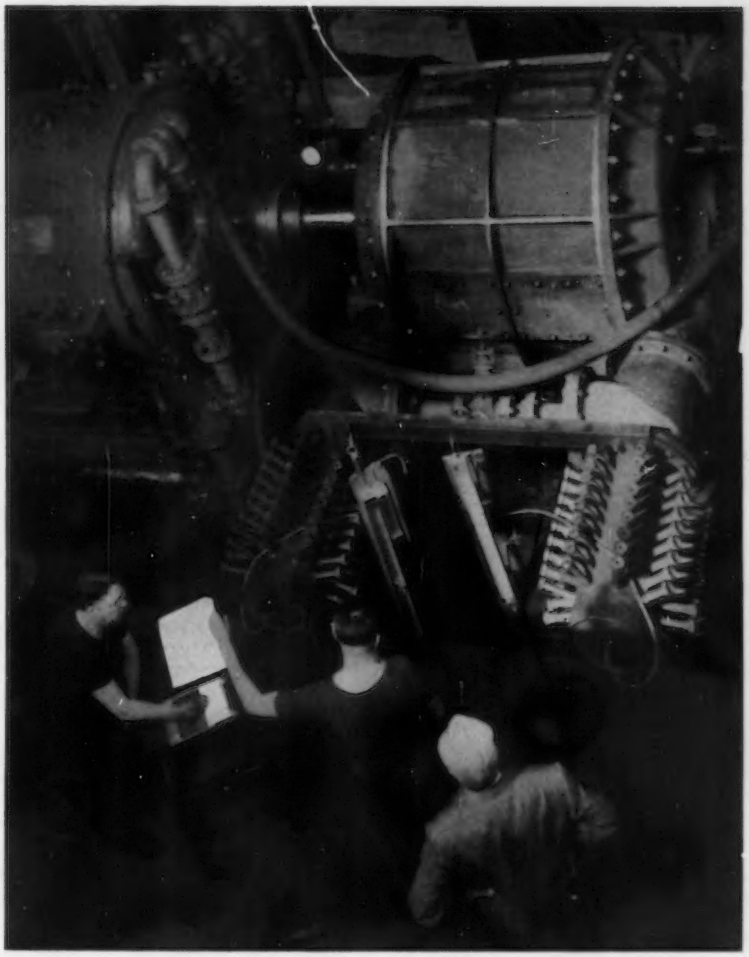
R. L. Jaeschke

Eaton Mfg. Co. has appointed Ralph L. Jaeschke as chief engineer of its Dynamatic Division to succeed W. F. King, who is retiring for health reasons.

Mr. King will remain on the engineering staff of Dynamatic and act as consultant on engineering matters.

Mr. Jaeschke, who will also retain his present position as manager of research and development, joined the Dynamatic Division in 1942 as electrical engineer. He was promoted to research manager in 1950.

Rated performance of every Nash Vacuum Pump is assured by this precise laboratory test



Rated capacities of Nash Vacuum Pumps are not theoretical. Every Nash Pump is tested individually. Air capacity is determined by delivery thru accurately machined and calibrated orifices. Related vacuum is measured by precise mercury column, and horse power is recorded electro-dynamically. Records of these tests are retained by us, and certified copies are available to Nash Pump owners.

That is one of the reasons why Nash Vacuum Pumps are installed in over a thousand leading Paper Mills. An engineer from Nash will be glad to survey your mill, and make recommendations, entirely without obligation to you.

NASH ENGINEERING COMPANY

440 WILSON ROAD, SO. NORWALK, CONN.

PRICES OF FIBERS

MARKET WOOD PULP

THIRD QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	‡$90.00/ —	‡$80.00/ —	‡$90.00/ —
Bleached Gw'd	$97.50/100.00	$97.50/100.00			
Kraft, Blchd.	157.00/ —	160.00/162.50	$157.00/162.50*		$157.50/ —
Kraft, Blchd. Hdwd.	152.00/ —		$137.00/ —		
Kraft, Semi-bleached	140.00/ —	140.00/ —			
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	155.00/ —	155.00/ —	*155.00/ —	*155.00/ —	155.00/ —
Sulphite, Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd.	135.00/ —	135.00/ —	†135.00/ —	*135.00/ —	
Sulphite, Unb'l. Gl'sn		134.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

‡ On Dock Atlantic Ports. * Freight allowed. † Varying Freight Allowances

NEW YORK RAG MARKET

PRICES NOMINAL

New Domestic Cotton Cuttings

Delivered Mill Basis

	Per 100 lbs.
No. 1 White Shirts	$13.50/$14.50
No. 1 Unblchd. Muslins	16.00/ 17.00
Blchd. & Unblchd. Underwears	15.00/ 16.00
No. 1 Light Cream Silesias	12.00/ 13.00
No. 1 Light Blue Overalls	7.00/ 8.00
Percales	6.00/ 6.50
No. 1 Light Prints	5.00/ 5.50
Suntan Khakis	5.75/ 6.75
Cottonades	3.00/ 3.50
No. 1 Washables	2.50/ 3.25

Old Domestic Cotton Rags

Delivered Mill Basis

	Per 100 lbs.
Mixed White	$3.25/$3.75
Cotton Pants & Overalls	2.25/ 2.75
Twos and Blues, Repacked	2.00/ 2.50
No. 2 Roofing	.65/ .80

COTTON LINTERS

Memphis Market

f.o.b. Oilmills

Week Ended Sept. 19		Per 100 lbs.
Grade 1	n. a.	
2		
3		$8.50/ $7.25
4		6.75/ 6.25
5	1 cut—felting	5.75/ 5.25
6		4.75/ 4.25
7		4.00/ 3.50

* Based on 73% cellulose.

OLD ROPE & BAGGING

(Prices to Dealers, f.o.b. N.Y.)

	Per 100 lbs.
New Burlap Cuts	$4.50/$5.50
Scrap Burlap	3.50/ 4.25
Australian Wool Pouches	5.00/ 5.50
Gunny	4.50/ 5.00
No. 1 Domestic Manila Rope	6.25/ 7.50
No. 1 Foreign Manila Rope	5.25/ 6.25
Domestic Sisal Strings	4.00/ 4.50

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	Sept. 22	Sept. 22	Sept. 22	Sept. 22
No. 1 Mixed Paper	$12.00/ 13.00	11.00/ 14.00	9.00/ —	14.00/ —
No. 1 News	18.00/ 19.00	17.00/ 18.00	18.00/ —	15.00/ —
Overissue News (Lg. size)	15.00/ 18.00	16.00/ 18.00	23.00/ —	19.00/ —
Mill Wrappers	13.00/ 15.00	14.00/ 16.00	10.00/ —	14.00/ —
Old Corrugated Containers	26.00/ 27.00	25.50/ 26.00	25.00/ —	25.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	35.00/ 40.00	40.00/ —	45.00/ —
New Double Kr. Ld. Corr. Cuts	37.50/ 40.00	40.00/ 42.50	42.50/ —	30.00/ 35.00
(Semi-chem. medium)	45.00/ 50.00	45.00/ 50.00	45.00/ 50.00	35.00/
New 100% Kraft Corr. Cuts	50.00/ 55.00	50.00/ 55.00	57.50/ —	45.00/ —
New Br. Kraft, Env. Cuts	65.00/ 70.00	70.00/ 75.00	52.50/ —	50.00/ 55.00
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	52.50/ —	55.00/ 60.00
New Br. Kr. Bag Waste Unprintd	60.00/ 65.00	65.00/ 75.00	62.50/ —	55.00/ 60.00
No. 1 Groundwood Shvs.	25.00/ 30.00	22.50/ 27.50	18.00/ —	30.00/ 35.00
White Newsblanks	50.00/ 55.00	47.50/ 52.50	35.00/ —	55.00/ —
No. 1 Soft White Shvs.	55.00/ 60.00	60.00/ 65.00	55.00/ —	— / —
Super Soft White Shvs.	65.00/ 75.00	75.00/ 85.00	65.00/ —	— / —
Hd. White Shvs.	90.00/ 95.00	95.00/105.00	85.00/ —	85.00/ 90.00
Hd. White Env. Cuts	105.00/110.00	110.00/115.00	90.00/ —	100.00/110.00
Col. Tab. Cards	50.00/ 55.00	55.00/ 60.00	52.50/ —	27.50/ —
Manila Tab. Cards	75.00/ 80.00	72.50/ 80.00	70.00/ —	65.00/ —
No. 1 Col. Ledger	30.00/ 32.50	30.00/ 35.00	40.00/ -	22.00/ —
White Ledger	55.00/ 60.00	50 00/ 57.50	55.00/ —	50.00/ —
Mixed Book & Mag.†	18.00/ 20.00	15.00/ 18.00	12.00/ –	— / —
No. 1 Books‡	22.00/ 25.00	22.00/ 27.00	27.50/ —	— / —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

PRICES OF MATERIALS

Aluminum sulphate:		
grd. coml. bulk, c.l. wks.	..cwt.	$2.00 / —
grd. iron-free, c.l. wks.	...cwt.	3.55 / —
Casein, acid prec.:		
dom. sh. pt. c.l., (30 mesh)	cwt.	56.00 / —
Arg. ex dock	.....cwt.	19.00 /19.50
New Zealand	.....cwt.	24.00 /25.00
Caustic soda:		
c.l. wks. solid, 76%	.....cwt.	4.80 / —
flak. & grd. drums, c.l.	...cwt.	5.20 / —
liquid 50% tanks	....	2.90 / —
liquid 73% tanks	....	3.00 / —
China Clay		
dom., dry-grd., airfloat:		
325 mesh bgs., c.l. Geo.	ton	10.00 /12.00
300 mesh, bgs., c.l. Geo.	ton	13.50 /14.50
imp., white, lump, c.l. ex. dock		20.00 /35 00
Chlorine:		
single-unit tanks, works	..cwt.	3.15 / —
multiple unit, 2-5 cars per yr.		5.75 / 4.05
Lime:		
hydrated, bulk, c.l. works	..ton	17.25 / —
quicklime, bulk, c.l. works	ton	14.25 / —
Gum rosin:		
K, M, N, drums, c.l. Savan,	cwt.	7.75 / 7.90
Rosin size:		
70%, gum & pale paste, tank cars, south, sh. pt.	.....cwt.	7.51 / —
Saltcake:		
dom. bulk, 100% anh. wks.	ton	28.00 / —
Soda ash:		
light, 58% ash bags, wks.	cwt.	1.85 / —
bulk, c.l. wks.	..... cwt.	1.55 / —
Sodium chlorate:		
drums, c.l., wks.	.....cwt.	9.00 / —
drums, l.c.l., wks.	....cwt.	9.50 /10.50
Sodium peroxide:		
dms., c.l. E. of Miss.	.....lb.	.20½/ —
l.c.l. (same basis)	.....	.21 / .21½
Sodium silicate, 40° Be.:		
tank-cars, wks.	.....cwt.	1.20 / —
drums, c.l. wks.	.....cwt.	1.55 / —
47° Be. WW.		
tank-cars, c.l. wks.	..... cwt.	1.90 / —
drums, c.l. wks.	.....cwt.	2.25 / —
Soybean, protein:		
chem. isol., wks. c.l. bags	..lb.	.19 / .23
Starches:		
Corn, multiwalls, c.l. prod. plant:		
pearl	...cwt.	6.49 / 6.75
white, dextrins	.....cwt.	8.08 / 8.20
chlorinated	..... cwt.	8.25 / 8.35
potato, Idaho, c.l. wks.	cwt.	6.35 / —
East, fr. all. 50 cents cwt.		
potato, Maine, c.l. wks.	cwt.	6.50 / —
Sulphuric acid:		
60° Be. cbys. c.l. wks.	....cwt.	2.00 / —
l.c.l. wks.	.....cwt.	2.30 / —
tank-cars, wks.	..... ton	18.60 / —
Sulphur:		
crude, o.l. mines, contract,	long ton	23.50 / —
f.o.b. vessels Gulf dock	...ton	25.00 / —
Sulphur dioxide:		
liquid, coml. cyl., wks.	...lb.	.10 / .12
multi-unit cars, wks.	..... lb.	.0535/ —
Talc, fibrous grd., bags:		
c.l. wks., N.Y.	..... ton	28.00 / —
l.c.l. wks., N.Y.	.....ton	31.00 /36.00
Titanium dioxide:		
anstase, c.l. dlvd. E. bags	..lb.	.25½/ —
l.c.l. dlvd.	.....lb.	.26½/ —
rutile, c.l. dlvd.	.....lb.	.27½/ —
l.c.l. dlvd.	.....lb.	.28½/ —

The makers of the famous Louisville Slugger Bat are celebrating in 1959 the 75th Anniversary of the making of the first "Slugger". This "best seller" throughout all these years—has maintained its leadership because of superior craftsmanship and quality.

THESE BEST SELLERS

The Walworth 726F Iron Body Wedge Gate Valve has been at the top of the list of Walworth's best sellers for twenty years. Suitable for steam, water, oil and gas, the 726F is available in sizes from 2" to 16" and pressures to 200 psi.

have 3 identical reasons for their success

- *A lifetime of experience with the raw materials*
- *Intimate knowledge of the field concerned*
- *Craftsmanship in design and construction*

In every industry where valves are used to handle fluids you'll probably find Walworth No. 726F Iron Body Gate Valves at work. They're strong. And they're so well designed there's been no basic change in their structure in 15 years. Like every other valve bearing the Walworth name, these best selling iron body valves are produced by people who know the services for which their products are made.

Walworth No. 726F Iron Body Valves are available with screwed or flanged ends. For full information on these iron valves or any of Walworth's complete lines of steel, iron, bronze, special alloys or plastic (PVC) valves, see your Walworth Distributor or write:

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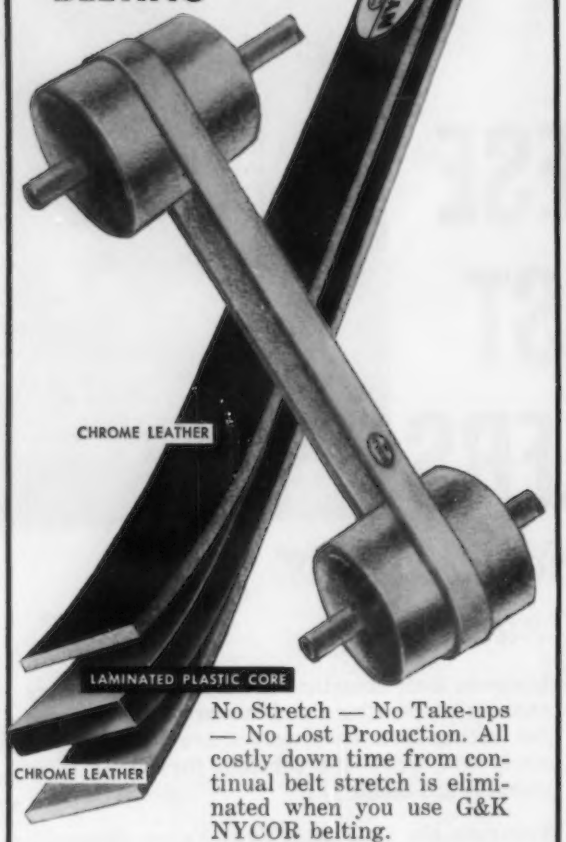
For **PAPER MAKING** *Machinery*

GRATON AND KNIGHT

NYCOR

FLAT BELTING



No Stretch — No Take-ups — No Lost Production. All costly down time from continual belt stretch is eliminated when you use G&K NYCOR belting.

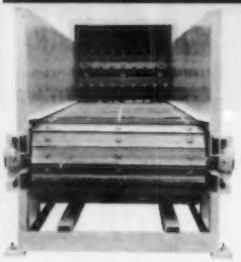
The relatively narrow width of NYCOR makes is ideally suited for cone pulley drives and it is fast becoming the standard belting of the paper industry.

Send For Brochure on Nycor Belting

GRATON & KNIGHT *Company*

WORCESTER 4, MASSACHUSETTS

DO YOU HAVE TO OPEN BAGASSE?

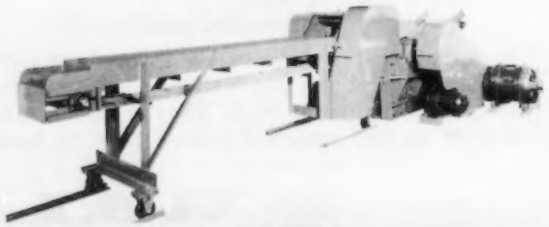


The feed, the breaker cylinder and the housing of this Taylor-Stiles Bale Opener are expressly designed for bagasse. These machines are widely used today. (For complete details of this equipment write for our folder app. 206.)

DO YOU HAVE TO OPEN AND CUT BAGASSE?

For opening bales you'll want the machine above. For cutting bagasse you need our heavy duty 500 series machine (below) designed for bagasse, straw, etc.

For details of our 500 series cutters write for our folder app. 203.



TAYLOR, STILES & CO.

10 Bridge Street **Riegelsville, N. J.**

With Armco Pipe these costs go down

FIRST COST. Armco Pipe comes in a wide range of diameters and wall thicknesses—lets you make the most economical selection for every application.

INSTALLED COST. Strong, lightweight Armco Pipe is economical to transport and handle. Standard or special fittings are supplied to your plans for a perfect fit, lower installation costs.

MAINTENANCE COST. Armco Pipe is sturdy and flexible—able to flex with sudden loads or shocks. Welded or mechanical joints are "bottle-tight." Maintenance goes down.

Write for data related to your requirements. Armco Drainage & Metal Products, Inc., 4908 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

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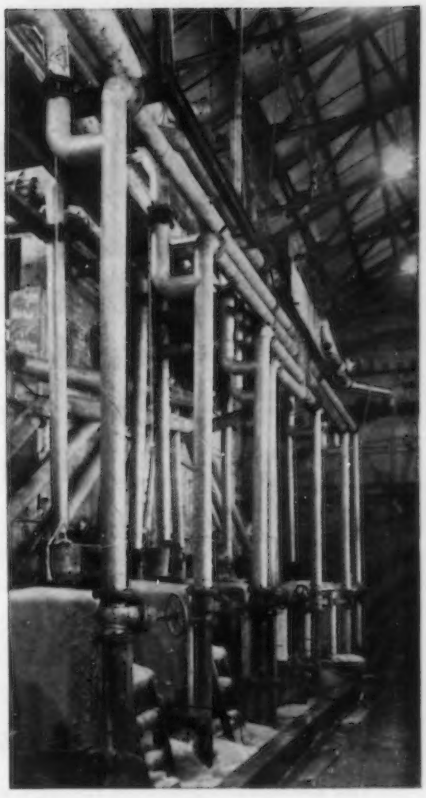

Armco Welded Steel Pipe—widely used for White Water, Stock Waste, Water Supply, and Steam Lines.

THE COWAN CENTRIFUGAL PULP SCREEN

U.S. Patent 2246669.

Outstanding in its field

and

Now available in three sizes

Mark "A", Large size.
Mark "E", Medium size.
The Cowan Junior, Small size.

All remarkable in performance for screening Groundwood, Sulphite, Kraft and other grades of pulp.

Write for complete Bulletin D-600.

MONTAGUE MACHINE COMPANY

TURNERS FALLS, MASS.

The Papermaker specifies

BOLTON EMERSON
TRADE MARK

First Choice
in REPLACEMENT TACKLE for all makes, sizes & types of Stock Treating Equipment

- Custom Heat Treated Steel
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- Hard Rolled Phosphor Bronze
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Contact: **John W. BOLTON & Sons, Inc.**
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Concrete Gravity Air-Water-Wash type water Filtration Plant producing, at low cost, water with turbidity 0, color under 5 and iron 0.05 p.p.m. Fe.

OTHER PRODUCTS

Demineralizing Plants
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All other types of water treating systems, including strainer valves, air wash systems, filter sand and anthracite beds and all filter repair and replacement parts. Over 50 years experience building new and modernizing old water treatment plants.

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Complete reports on excellent locations for the manufacture of pulp and paper in the Seaboard Southeast will be furnished interested prospects. Our line serves one of the world's finest timber growing regions.

Accurate, up-to-the-minute information on timber supply, water, plant sites and other important factors is yours for the asking.

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Assistant Vice President
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AIR LINE RAILROAD

NOW THERE IS A NEW, IMPROVED SLOTTED END OF GRAIN

SUCTION BOX COVER

The characteristics of end grain Maple naturally provide a smooth, even, long wearing surface. Laminated plastic cross members support the Maple end grain lands. LOVAC construction eliminates sag. Check these features: Eliminates streaking, less pinholes, lessens clogging, gives longer wire life, even vacuum, better fibre formation and better tensile strength.

Write for nearest representative, data sheet and literature.

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Supplying Your Requirements

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PAPER CONVERTING MACHINERY DESIGNER

Wanted by manufacturer of paper and film bag machinery and printing presses.

Located in pleasant New Jersey community.

Degree not necessary—only the ability and practical background for independent design of converting machinery.

Excellent opportunity for capable man. Salary open.

Please send resume of experience. Box 58-13 care Paper Trade Journal.
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BEATER ROOM FOREMAN

To take complete charge of fibre preparation and color matching in a well known fine paper and bleached specialties mill. Middle Atlantic location. Send resume to Box 58-244 care Paper Trade Journal.
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MASTER MECHANIC WANTED

MUST BE EXPERIENCED ON MODERN HIGH SPEED CYLINDER AND FOURDRINIER PAPER MACHINES. GOOD SALARY AND STEADY WORK.
ALSO HOSPITALIZATION PLAN.
EXCELLENT WORKING CONDITIONS.
Address Box 58-245 care Paper Trade Journal.
O-13

TECHNICAL SALESMAN WANTED

Good opportunity for experienced salesman of chemical auxiliary products in the paper field. To cover southern states. Send complete details of experience and education to Box 58-227 care of Paper Trade Journal.
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Personnel Service Associates
115 State St., Springfield 3, Mass.
Tel. RE 6-4749
H. M. Grasselt, Manager
Personnel Consultants
Serving Employers and Employees in the Pulp, Paper and Allied Industries
Administrative—Technical
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Personalized Confidential S-29

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AN EXPERIENCED WORKING PAPER MILL MASTER MECHANIC. MUST BE THOROUGHLY EXPERIENCED WITH FOURDRINIER PAPER MACHINES. MILL LOCATED IN NEW YORK.

WANTED

MACHINE TENDERS FOR FOURDRINIER MACHINE MILL LOCATED IN NEW YORK.

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Situations Wanted

CONVERTING SUPERVISOR

Unusual record in Labor Relations, Planning and Production. Eleven years with present employer. High regard for degrees but do not have any for myself.

Would not hesitate to take position outside Continental U.S.A. if benefits merit it. Complete resume furnished upon request.

Address Box 58-229 care Paper Trade Journal.
N.C.

CHANGE WANTED

Paper mill or general supt. 17 years in present position. Age 57. Wish either permanent connection or temporary on special problems, such as, rebuilding and speeding up machines or starting new mills any part of world or special problems between printer sales and mfg. Write Box 58-248 care Paper Trade Journal.
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Superintendent or Tour Boss

Age 48, good health, desires change. 20 years experience on high speed Fourdrinier Yankee machines making toilet tissue, facial and towels. Also some experience on board and condenser paper. Familiar with color and de-inking. Address Box 58-247 care Paper Trade Journal.
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ENGINEER

M.E. with very extensive experience covering many years in the pulp, paper and board industry as Plant Engineer, Chief Engineer and general production supervision. Qualified for engineering, construction and maintenance supervision. Renovation and modernization. Mills and power plants. Address Box 58-230 care Paper Trade Journal.
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CHEMIST WITH EXTENSIVE EXPERIENCE IN DEVELOPMENT AND PRODUCTION OF FINE PAPER, BOTH IN LOW DENSITY ABSORBENT, FILTER LAMINATING PAPER FIELD AND IN THE SIZED PAPER SPECIALTY FIELD, DESIRES WORK WITH FIRM INTERESTED IN IMPROVEMENT AND DIVERSIFICATION. ADDRESS BOX 58-246 CARE PAPER TRADE JOURNAL.
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HAVE AVAILABLE:

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1—65" 6-Color Kidder Master Anilixer
1—54" 1-color Rotogravure Press
1—49" 1-color Rotogravure Press
2—41½" 4-color Hudson Sharp Flexo Presses
1—40" 4-color Hudson Sharp Flexo, Roll to Sheets
1—40" 3-color Kohlback Flexo Press
2—36" 4 & 5 color P. W. Wolverine Hydro Presses
2—36" 2-color Champion Gravure Presses
1—31⅓" 4-Color Helarich Flexographic Press.
1—30" 4-color Kidder Cello-Printer
1—30" Kidder 6 station Flexographic press
1—26" 4-color Kidder Flexographic
1—26" 3-color HYROTO Rotogravure Press
1—24" 3-color Rotogravure Press
1—24" 4-Color Kidder Celloprinter
2—12 x 12 New Era Presses
1—7" Young Label Printer

TAILPRINTERS

1—32" 2-color Hansel
1—30" 5-color Gregg Flexo Press
1—32" 2-color 8 pitch.
1—30" 2-color Dietz 10 Pitch.
1—16" 2-color Potdevin.

POWER PAPER CUTTERS

Seybolds: Precision: 40", 50", 57" & 64"; 10Z: 40", 57" & 65"; 20th Century: 45", 54" & 60"; Dayton (6Z): 35", 40" & 84"; Holyoke: 65"; Sheridan: 36" new model, 55"; Oswegos: 38" & 44" & 24", 54" Heavy Duty; Lawson: 52" Auto Space & 52" Standard.

CAMACHINES

1—72"—10-04 8 Shear Cut.
1—72"—10-5 rebuilt and guaranteed, with water cooled brake and anti-friction bearing. Speed 2000 F.P.m.
1—66" & 2—52" 9-5.
1—62" 26-2A with 100 score cutting units
1—62" 26-3A.
1—62"—40—1—AF
1—60" Cameron Type 42, for small rolls.
1—52" Type 6 Rebuilt and guaranteed. Speed 2,000 F.P.M.
1—52", & 1—42", Model 24-7.
1—42" Type 9-5-A Roller Bearing 1500 fpm.
1—30", 1—42", 1—52" and 2—62" Type 6

OTHER SLITTERS

1—60" Langston Type A.
1—48" Langston Heavy Duty Board Slitter.
1—45" Ruf Duplex Winder.
1—42" Kidder Merchant Model
1—38" and 1—40" Beck Razor Blade.
2—24", 1—30", 1—36" & 1—40" Kidder S.L. Shear cut

MISCELLANEOUS MACHINES

1—44" German spot sheeter, Reeves Drive
1—48" Hot Melt Coated and Laminator
1—54" and 1—72" Mayer Equalizer Waxing machines.
1—40" and 1—52" Parry Liner with Reeves Drive (Roll to roll and roll to sheet)
1—40" and 1—48" Asphalt Laminators.
1—60" Hot Melt Coaters & laminators
1—Knowlton Tube Winder with Recutter.
1—50" New Type "C" Fales Slitter
8—Hamblet Sheeters 42", 45", 50", 62", 68", 72", 84" and 104".
1—30" Peters Sheeter. Model UD.
1—45" Model CSHD Beck Sheeter with layboy & 1—45" Model CSH.
1—45" and 1—55" Globe Sheeter.
3—Schultz continuous roll winders. Two—12", One 18" and 1—48".
3—Polyette Polyethylene tubular bag machines
2—Model B, 10 Baqprint machines.
Die Presses: 1—60" x 14" Seeley. 1—50" x 33" Sheridan, 2—37" x 18" Sheridans
1—2 Web, 1—3 Web Paper Converting Co.'s. Jr. Dispenser Napkin Machines
1—Potdevin Model 111-CF & S Cellophane Bag Machine.
1—54" x 26" Sheridan, Model 9A. Embossing Press, roll feed.
Several Hayssen Wrapping Machines
1—Potdevin Model 224 Garment Bag Machine, 2 color printing, large range.
3—Potdevin Bottomers
1—Weber Model 2-CN Cello Bag Machine
1—50" Hudson Sharp Embosser-tiater.
1—48" Unicraft Embosser
3—Waldron Embossers: 1—22", 1—46" & 1—60" (latter two heavy duty)
1—30" Dornbush embosser. S-29
1—32 x 45 Sheridan Model 8-D Embosser

BARGAINS

IMMEDIATE DELIVERY

1—128" B & S 10-Roll Calender Stack. King Roll 24" Dia. Heavy box frames, full set of doctors. Excellent Condition.
1—86" Farrel 8-Roll Calender Stack. Anti-friction Bearings. Excellent Condition.
26—36" x 72" Complete Dryer Section, Stack, Drives, Etc.
10—48" x 150" Pusey & Jones Dryers.
1—84" Kamyr Machine, Complete. 75 ton per day output.
1—E. D. Jones Majestic Jordon No. A-482. New S.S. Fillings. Like New.
1—E. D. Jones Imperial Jordon, S.S. Fillings
1—Noble & Wood Mammoth Jr. Jordon, S.S. Fillings
1—Monarch Jordon, Model SP, Serial #21095, no fillings. Direct connected to a 75 H.P. G.E. 400 RPM Motor.
1—14 Plate Impco Flat Screen, Dunbar Drive, Bronze Vat. Direct Motor Driven.
1—A.P.P. Rotary Centrifugal Pulp Screen, 40" Dia. x 42" Face. Serial #1274227. Like new. Capable of 40 ton groundwood pulp per day.
1—Trimbey Senior Rotary Screen.
2—Impco Rotary Pulp Screens.
3—No. 3 Impco Rotary Knotter Screens. S.S. Plates.
1—110" Pusey & Jones 2-Drum Winder, A.F. Bearings.
1—Hudson Sharpe Toilet Tissue Converting Machine. Ser. #2123. 8 Spare Mandrel Bars.
1—42" Dia. x 110" Face Pope Type Reel. Excellent Condition.
1—25" Dia. x 156" Face Sandusky Suction Couch, Bearings & Stands.
1—22" Dia. x 138" Perforated Face Sandusky Suction Couch, Bearings & Stands.
1—10-Knife Carthage Chipper with Anti-friction Bearings.
1—54" Dia. x 48" Face Valley Iron Tub Beater.
1—Dilts 53" Dia. x 60" Face—2000 lb. Iron Tub Beater. S.S. Extractor Type Hood.
1—Seybold Knife Grinder. Size G. 84" Table. Serial #4X802.
1—Sandy Hill Sulphur Burner. Complete.
2—#2 Bird Screens with Copper Vats & S.S. Plates.
1—Tugboat Annie Pulper.
1—Worthington Air Compressor, Model 5TR2. 2-Stage, Air Cooled. 5 H.P.
1—C.P. 12 x 10 Air Compressor, 100# Pressure.
1—I.R. 7 x 7 Air Compressor. 100# Pressure.
1—No. 244 Mattison 18" Core Cutting Saw —5 H.P. 3450 RPM, 3/60/220-440 volt.
1—90 H.P. Terry Turbine, Type G-4000/1000 RPM. For Paper Machine Drive. Complete.
1—No. 2 Jones Pulper. A.F. Bearings, Spare Worm.
1—36" Putman H.D. Lathe—15' Centers.
1—24" x 6' L & S Geared Head, H.D. Machine Lathe, Taper Attachment, Hollow Spindle, Motorized.
1—350 H.P. G.E. 2200 Volt, 450 RPM Motor with G.E. 350 H.P. 2200 Volt, Type CR7065-M5 Controller.
1—100 H.P. U.S. 3/60/220-440 Volt, 900 RPM, D.P. Motor.
1—A.C. 75 H.P. 3/60/220-440 Volt, 720 RPM. T.E.F.C. Type ARZX Motor.
1—A.C. 60 H.P. 3/60/220-440 Volt, 720 RPM. T.E.F.C. Type ARZX Motor.
1—G.E. 100 H.P. MG Set, 250 Volt D.C.
1—250 H.P. Ingersoll Rand Diesel Engine Generator Set—G.E. Generator, 150 KW, 480 Volts, 720 RPM.

Save over 50% on your requirements for New Jordon Fillings. S.S., Bronze & Carbon Steel.

Gear Reducers, P.I.V. Drives, Generators, B.B. Pumps, Stock Pumps, Plunger Pumps, Etc.

1000 Electric Motors from ¼ H.P. to 600 H.P. in Stock.

The above is but a small part of the inventory we carry. We can furnish you with almost anything in the line of paper mill, electrical and machine shop equipment.

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Situations Wanted

EXECUTIVE—Conversion of Boards and Papers. Currently Works Manager; desire change for challenging opportunity. Highly successful record in organization, production and development. Address Box 58-122 care Paper Trade Journal.

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For Sale

For sale from US surplus stocks:

100 tons metal foil cloth back, in blue, black, green and copper, 90-96 cm wide, on rolls of 242.5 lbs. American origina, in original packing*, seaworthy, in cases. Price: per ton net for the lot cif New York $35.25.

*) thus practically new

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SURPLUS PAPER MILL EQUIPMENT

Dozens of pieces of paper mill equipment — chippers, rolls, head boxes, pumps, etc. Some new, some used but with a lot of good service still ahead of them. For complete listing and full details contact Purchasing Department, Section C, Box 570, Savannah, Georgia.

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FOR SALE

ONE CARTHAGE 38" x 5' HYDRAULIC WOOD SPLITTER. COMPLETE WITH PUSH BUTTON CONTROLS. PURCHASED NEW IN 1957 AND IN EXCELLENT CONDITION. CAN BE INSPECTED.

REPLY BOX 58-237 care PAPER TRADE JOURNAL.

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REBUILT — GUARANTEED
NASH VACUUM PUMPS
In Stock, following sizes:
H-10, H-7, H-6, L-5, L-4, TS-7, #4, #2
Brill Equipment Company
2401 Third Ave., New York 51, N. Y.
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S-29

Wanted

WANTED

Screens, either late type Shartle or late type Bird, suitable for seven to ten ton each per 24 hours. Could also use Bird Vibrator Screens or Shartle Selectifier Screens for smaller tonnages. Box 58-238 care Paper Trade Journal.

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LOOK
through the columns of the
CLEARING HOUSE

FOR SALE

YANKEE DRYER 6' DIA. — 92" FACE—JAMAR-OLMEN COMPANY HOOD AND AIR SYSTEM

1—Yankee dryer complete, 6' dia. —92" face
1—Pressure roll rigged with air cylinder arrangement
1—Spare pressure roll Yankee dryer framing
1—Creping doctor
1—Cleaning doctor
1—Oscillating doctor

Present day replacement value, $45,000.00 per Sandy Hill Iron and Brass Works letter dated August 25th, 1958.

Reasonable offer will be considered

One Hood and Air System for 6'0" Diameter Yankee Dryer consisting of Hood, Exhaust System, Exhaust Fan, Drive and Sheaves, Vapor Absorption.

System consisting of Fan, Drive, Sheaves, Heaters, Nozzles, and one 10 H.P. Motor and one 5/2½ H.P. Motor with Starter. Price $6,700.00, our cost.

1—Trimbey Consistency Regulator, Trimbey Machine Works, Glen Falls, New York.
2—Felt Dryers, 88" Face, 28" Dia.
1—Top Section complete of Cameron Rewinder #18, 42" Diameter Rolls.
5—3 pocket Carthage Grinders, water power driven.

22—68" Wet Lap Pulp Presses, cast iron frames, 31" x 66" Pulp Felt Stainless Steel Screens, water power drive, and
2—72" Wet Lap Pulp Presses, cast iron frames, 33" x 68" Pulp Felt Stainless Steel Screens, water power drive.

According to our appraisal the cost of reproducing the first two Presses is $9364.00 while the sound value is $3277.40; and the cost of reproducing the second two presses is $9480.00 while the sound value is $3318.00. We have discontinued Wet Lap process at groundwood mill at Warrensburg, New York.

Inspection at our plant at Warrensburg, New York; near Glens Falls Airport. This equipment is offered subject to prior sale. Machine had been operating 6 days per week manufacturing toweling paper up to September 1st.

THOMAS A. GALANTE
& SONS, INC.
P.O. Box 150,
Mechanicsville, New York
MOrris 4-7322 ALbany 4-1106

S-29

BEATERS
2—1500 lb. rag beaters, Valley Iron, bandless rolls, 54″ x 48″, cast iron tubs.

CALENDER STACKS
1—3 roll 84″ calender stack.
1—4 roll 72″ Calender Stack. (Extra heavy duty).
1—5 roll 82″ face.
1—5 roll 86″.
1—7 roll, 84″ face.

CHIPPERS
1—96″ Murray 4 knife Chipper—anti-friction bearings.
1—84″ 10 knife Carthage Chipper. Anti-friction bearings.
24—Chipper Knives 15⅞ x 8¼, 2 slot.

COUCH ROLLS
4—Practically new, rubber couch rolls, 18″ diameter x 78″ face.

CREPING DRYER
1—48″ diameter x 120″ face, with frames, bearings, doctor blade and drive.

CRUSHER & HAMMERMILL
1—Murray Chip Crusher.
1—Jeffrey Hammermill (18″ dia. rotor).

CYLINDER MOLDS
2—42″ diameter x 108″ face.
8—36″ diameter x 94″ face, hollow shafts, Very good condition.
1—30″ diameter x 72″ face.
1—30″ diameter x 92″ face.
1—36″ diameter x 84″ face
2—36″ dia. x 54″ face.
2—36″ diameter x 110″ face.
3—36″ diameter x 90″ face, 18″ diameter couch rolls.
1—60″ dia. x 170″ face.

DIGESTERS
1—Biggs 12′ 6″. (Globe)

DISINTEGRATOR
1—Shartle 8″ disintegrator (new) with 125 horsepower induction motor. (Totally enclosed)

DRIVES
1—Rice-Barton hypoid enclosed drive, 4 to 1 ratio.
1—#6 Reeves vertical—anti friction bearings, totally enclosed.
1—Sandy Hill right angle 50 H.P. (4.75 to 1).
1—Jones 21 H.P., ratio 10 to 1 (enclosed angle drive)
1—#4 Reeves Drive
2—Waterbury Hydraulic Variable speed line shaft drives (from 40 to 100 H.P.)
3—Rice Barton enclosed drives, double reduction (14 to 1 one end, 4 to 1 other end)
1—Beloit hypoid enclosed drive 60 h.p. 5 to 1 ratio.

DRYERS
1—28″ diameter x 84″ face
2—30″ diameter x 40″ face with bearings
2—30″ diameter x 48″ face with bearings.
60—36″ diameter x 84″ face, complete with frames, gears & bearings.
4—48″ dia. x 52″ face with frames, gears, bearings
1—36″ diameter x 44″ face
3—36″ diameter x 76″ face.
6—36″ diameter x 80″ face.
22—28″ diameter x 40″ face with frames, gears and felt rolls
1—16″ diameter x 54″ face (steel)
6—48″ diameter x 130″ face.
2—Cooling Drums, bronze 36″ x 128″, with frames, gears & necessary rolls to make up the unit. (After dryers)
5—36″ diameter x 84″ face, anti friction bearings and gears.

EMBOSSING CALENDERS
1—43″ 3-Roll Embossing Calender.
1—62″ 2 roll Embosser

EXTRACTOR ROLLS
1—Extractor roll, 26″ diameter x 104″ face
1—Rice Barton & Fales, Extractor Roll, 26″ diameter x 104″ face

FELT CONDITIONERS
1—Scofield, 125″ face
1—Scofield, 154″ face

FELT ROLLS
50—Brass Felt Rolls, with Brass Journals, 72″ face x 5″ dia.

FLAT SCREENS
1—8 Plate "Packer"
1—12 Plate "Packer"
1—16 Plate "Packer" late type roller shoes.

JORDANS
1—Noble & Wood Mammoth
1—Noble & Wood Monarch, Type D.

LABORATORY EQUIPMENT
1—Bauer-McNett Fibre Classifiner, monel tanks, complete with copper screen plates.
1—Basis weight scale
1—16″ diameter x 24″ face Laboratory High Pressure Dryer
1—Press Roll 6″ diameter 24″ Face, steam jacketted
1—2′ Shartle Hydrapulper
2—8″ x 8″ Valley Sheet dryers
1—12″ x 12″ Valley Sheet dryer
1—6″ diameter Hydraulic Press
1—25 lb. Valley Laboratory Beater, with washer.
1—15 lb. Dilts Hollow Mid Feather Laboratory Beater, antifriction bearings. Complete with washer.
1—Experimental Digester (High Pressure)
1—Sutherland Refiner
2—Schopper-Riegler Freeness Testers
1—Schopper Tensile Tester
1—Mulleen Tester, motorized
1—8″ x 8″ Williams Sheet Mold
2—8″ x 8″ Valley Hydraulic Presses
1—Williams Smoothness and Formation Tester
1—15-20 20# E. D. Jones Beater

LAMINATING MACHINES
2—84″ Asphalt laminators.

MISCELLANEOUS
1—#1 Miami Selectrap

PACKAGING MACHINE
1—Morpac Packaging Machine (Details on request).

PRESS ROLLS
2—Chilled iron, chrome plated 9″ x 72″
1—Chilled iron, chrome plated 12″ x 100″
1—Chilled iron, chrome plated 10″ x 74″
8—sets (1 rubber, 1 chrome steel) 74″ face x 15″ dia., complete with bearings.

PULPERS
4—Dyno-Pulpers

PUMP
1—Morris-10,000 g.p.m. 25 ft. head (all bronze)

REELS
1—86″ 2 bowl reel.
1—84″ 3 bowl revolving reel.
1—100″ Rice Barton 2 bowl Reel, heavy duty.
1—123″ 3 bowl Revolving Reel
1—134″ 2 drum
1—72″ Downingtown Reel, 2 bowl.

REFINERS
1—#2 Claflin refiner
1—Dilts Classifiner, practically new
1—Rice Barton Dynofiner, details on request
1—Dilts, Hydrafiner, stainless steel filling, anti-friction bearings, excellent condition, including 125 h.p. motor
1—12″ Wiener Refiner, with 200 h.p. motor

REGULATORS
1—Bird Consistency Regulator
1—Trimbey Consistency Regulator

ROLLS
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

ROTARY SCREENS
6—Trimbey Sr. Pulp Screens.
1—#1A Bird, copper vat.
2—APMEW Rotary Pulp Screens.

SAVEALL
1—LaMorte, 48″ diameter x 82″ face cylinder mold.

SCREEN PLATES
Bird Rotary screen plates.

SHEETER
1—132″ Hamblet heavy duty duplex sheeter, anti-friction bearings throughout, including layboy and backstand.
1—84″ Hamblet, duplex, back stands.

SHREDDER
1—16″ "Swift" Paper Shredder

SLITTERS & WINDERS
1—32″ Cameron Type 9
1—42″ Cameron Type 9
3—42″ Cameron Type 6
1—42″ Cameron Type 8
1—42″ Cameron Type 26-2A
1—42″ Cameron Type 26-3A. (Duplex)
3—50″ Cameron Type 6
1—62″ Cameron Type 6
1—62″ Cameron Type 8
1—72″ Cameron Type 9
1—84″ Cameron Type 12
1—86″ Two Drum Moore & White 50″ diameter rewind.
1—96″ 4 drum Moore & White winder
1—128″ Beloit Shear cut winder, drive and variable speed motor.

SLITTING DEVICE
84″ Quick change slitting device shear cut, complete, practically new.

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18—3″ Johnson steam joints (new)

STOCK MAKER
1—Morden Stock Maker, 150 h.p. motor

STOCK PUMP
1—10 x 20 Shartle Triplex

STRAINER
1—Elliott Twin Strainer, Type R

SUCTION BOXES
2—150″ Stainless steel Suction Boxes

SUCTION COUCH SHELL
1—Downingtown suction couch shell only, 127½″ face x 26″ diameter

SUCTION COUCH ROLLS
1—Beloit, 36″ diameter x 246″ face, SKF bearings.

SUCTION FELT ROLLS
1—Gilbert & Nash 122″ face
1—Beloit Rubber Covered Suction Felt Roll 109 face x 20½″ diameter.

SUCTION PRESS SHELL
1—14″ diameter x 100″ drilled face, suction Press Shell only.

SUPER CALENDER STACK
1—9 Roll 56″

TABLE ROLLS
22—Rubber Covered 10″ diameter x 246″ face
30—4″ dia. x 130″ face (will cut to size)

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2—Iron End Vats with 36″ diameter x 84″ face Cylinder Molds and 20″ diameter couch rolls, including spare cylinder mold and spare couch roll, all anti friction bearing equipped.

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TRIMMER
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1—H-7
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3—L-5 Nash Vacuum Pumps
1—L-6 Nash Vacuum Pump

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2—Hummer electric Vibrating Screens, stainless steel, new
1—Selectro 2 stage, 5 ft. x 10 ft.
1—36″ x 48″ Vibrating Screen

WEB GUIDE
1—110″ Stanford Constant Tension Unit, air operated.

YANKEE DRYERS
1—140″ face x 12′ dia., anti-friction bearings & stands.
1—84″ diameter x 56″ face.

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FOR SALE

Two paper machines, can be inspected while now operating.

One is 82" x 54 ft. 10" wire Fourdrinier with three presses. First section of dryers 18—48" x 76", double deck, top and bottom felt equipment. Size press. Second section of dryers consists of 6—48" x 76", top and bottom felt equipment. 2 calenders, reel, winder, drive, prime mover, pumps, as last operated, including L 7 Nash, No. 5 Bird Saveall, DeZurik consistency regulator, 4 Vortraps, Jones Imperial Jordan, 3A Bird screen. Machine last producing about 16 to 18 tons of 20 to 60 lb. Bond.

Second machine is Fourdrinier with wire 65" x 32 ft. 11" wire. Has 14" suction couch, 3 presses, 30 dryers 28 x 72" with top and bottom felt equipment in First Section. Size press. In Second Dryer Section there is 24" lead dryer and 6 dryers 36" x 72" with top and bottom felt equipment. 5 roll calender. Reel. Moore & White cutter with layboy. Drive including prime mover. Two L 6 Nash pumps. Pony Jordan. Last producing about 6 to 10 tons sixty to eighty lb. Bond.

Frank H. Davis Company, 175 Richdale Avenue, Cambridge, Massachusetts S-29

FOR SALE

1—ELWELL PARKER ELECTRIC FORK LIFT
#14150 Type E14—Cap 4000 #72" Lift
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#12443 Type E14—Cap 4000 #72" Lift
These trucks are complete with four (4) batteries (2 of these are brand new). Battery stands—charger units—distilled water unit.
2—GLUE MIXERS WITH HEAT UNITS 15" WIDE AND 14" DEEP
3—LEWIS SHEPARD HAND LIFT JACKS
Type WMT—Model 648-31358—Cap 2000#
1—BARRETT LIFT TRUCK
Model POK 660, Serial No. 211236—Cap 4000# Complete with Battery and Charger.
1—SEYBOLD PRECISION GUILLOTINE CUTTER
Model #10ZF, Serial #16958—65" width cut—Table 54" deep to knife.
2—LAWTON TISSUE WRAPPING MACHINES
Serial #121-#114
1—NOBEL AND JOHNSON MACHINE CO. JORDAN
Jordan plug 35" Long—Large diameter 21"
1—TRIMBEY REGULATOR
Patent #2083
2—BEATER WASHERS CYLINDERS
8 sides—size 18" x 42"
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18" Belt — 30' conveyor — Serial #Y-19066 Wisconsin air cooled engine V4 cylinder
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92" FACE ROLLS OF THE FOLLOWING:
2 wooden rolls; jacks—1 felt roll—1 stone roll—Manufactured by Imported Paper Machine Co.
1—54" HUDSON SHARP EMBOSSER
#840
1—54" HUDSON SHARP EMBOSSER
#821
1—LAWTON TOILET TISSUE WRAPPING MACHINE
Serial #127

1—81" PAPER CONVERTING ROLL TISSUE MACHINE
Model #125 #58
3—81" DIETZ PERFORATORS
With combination heads for 4½ x 4½—11 x 7½—11 x 13½ with parent roll drives.
7—81" ROLL TISSUE PERFORATORS
Size 4½ x 4½
2—42" HUDSON SHARP SINGLE FOLD TOWEL MACHINES
#1627—#1628
1—30" PAPER CONVERTING SINGLE FOLD TOWEL MACHINE
Model #463—Machine #313
1—PACKOMATIC CASE SEALER MACHINE
Machine #807 Job #675 Manufactured by J. L. Ferguson Company. Accommodates Case 8" to 30" in height, from 8" to 22" in width. Fully automatic. Length of Dryer 20 feet.
1—PRECISION SEYBOLD GUILLOTINE CUTTER
49" knife. Table 48" deep to knife 5½" stroke.
1—72" DILLON SHEETER
Serial #B225 Simplex—with 24 Roll Back Stand. Dillon Layboy and Quire folder #B-226.
1—50" HUDSON SHARP SINGLEFOLD TOWEL MACHINE
Serial #1003
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38" wide—36" deep
1—TOWEL EMBOSSER
84" wide

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Model 260 #148
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Positive preforation—Model 460 No. 310C.
1—GLUE MIXER
Tub 24" deep—27" across
1—36" HUDSON SHARP SINGLE FOLD TOWEL MACHINE
Model #B57 PL7
1—72" DIETZ PERFORATOR
With combination cylinder and head—Sizes 4½ x 4½, 11 x 7½, 11 x 13½, 4½ x 5.
2—72" DIETZ PERFORATORS
Size 4½ x 4½
1—72" HUDSON SHARP 3 BAR PERFORATOR
Size 4½ x 4½
1—67½" DIETZ PERFORATOR
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With combination cylinder and head—Sizes 4½ x 4½, 11 x 7½, 11 x 13½, 4½ x 5
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2 lb. Valley Iron Works laboratory beater
48" x 44" Dayton, new 1947, hollow midfeather, cast iron tub high speed type
48" x 40" Noble & Wood, cast iron tub
65" x 54" Jones, 68 stainless steel bars, with lighter equipment, dump valve

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7—60" x 175"
5—Rice Barton 60" x 164", (2 new 1947)
12—48" x 160" Pusey & Jones with bearings
9—48" x 152" Rice Barton
8—48" x 148" Pusey & Jones
4—48" x 144" Pusey & Jones
4—42" x 140" Beloit
1—48" x 136"
2—36" x 136" Horne
13—Black & Clawson 48 x 134", stamped sixty lb.
1—Black & Clawson 42 x 134"
1—48" x 132" Horne
19—Downingtown 48 x 130", last used sixty lb. pressure
1—Black & Clawson 42 x 130"
1—Rice Barton 48 x 124"
1—Pusey & Jones 48" x 114"
1—Downingtown 42 x 114"
1—48 x 106"
4—42" x 102"
1—48 x 98"
1—48 x 89"
26—36 x 88" Black & Clawson, with frames, gears, bearings
4—42 x 86" Black & Clawson
104—Moore & White, double deck, 36 x 84" with frames, gears, bearings
15—36" x 82" Downingtown with frames, gears, bearings
1—48 x 78"
12—36 x 76"
4—40 x 76"
4—42 x 73"
4—36 x 64"
2—48 x 56"
2—48 x 48"
40—48 x 46"
16—36 x 44"
9—36 x 40" with frames, gears, bearings

JORDANS

Jones Imperial, anti friction, new 3/16" stainless steel filling
Number 1 Emerson, anti friction, 3/16" bronze filling
Number 1 Emerson, plain bearing, ring type filling
Number 4 Emerson Junior, anti friction, 1/2" bars
Noble & Wood Unifiner or Mammoth Junior, anti friction, new 1951
Horne Pony Jordan, new Bar type filling, 100 HP 440 volt motor
Jolly Pony Jordan, stainless steel filling
Noble & Wood Mammoth D
No. 2 Appleton
Jones Majestic
36—2 Sprout Waldron refiner, 325 HP motor

FOURDRINIERS

228" Pusey & Jones, 80 ft. wire.
210" Pusey & Jones, 89 ft. 9" wire, removable. Pressure head box. Stainless steel rails, cross ties. Most of parts new 1953.
200" Beloit, wire 65 ft. 6½", removable. 30" Beloit couch.
2—170" Rice Barton, 30" couch, rebuilt 1951.
145" Rice Barton, cscillator for boxes. Stretch and guide, new 1950. New shell for 22" couch, never used.
96" x 64 ft. 10" Valley slice, 25" Downingtown suction couch.

PAPER MACHINES

120" Fourdrinier, 2 suction presses, 21—48" dryers, calender, reel, winder. Set up as last operated. Trim 112"
102" Yankee with 10 ft. dia. dryer, new 1952, ASME tested 160 lbs. Fourdrinier, suction press, calender, reel, Jordan, Selectifier screen
102" x 28 ft. wire Fourdrinier tissue machine, trim 101". Speed 365 FPM. Production about 4 tons per day toilet tissue facial grade. 6 ft. Yankee dryer, calender, winder, L 8 Nash vacuum pump.
2—102" Fourdrinier machines, trim 88", three plain presses, 48" dryers, 2 calenders, reel, type 18 Cameron winder.
Four cylinder 81" trim board machine, moulds 36 x 93", 32—36" x 87" dryers, 2 calenders, reel, winder, duplex cutter, drives, Jordans, screens.
Six cylinder 80" trim machine, moulds 48" x 96", two primary presses, anti friction, 3 main presses, anti friction. 38 dryers 48" x 86", triple deck. 2 calenders, Duplex cutter, 2 drum winder, drive, pumps.
72" trim Fourdrinier machine with wire 82" x 54 ft. 10". 18" suction couch, 3 plain presses. Second press reverse. 18 dryers 48 x 76", double deck with top and bottom felt. Size press. 6 dryers 48" x 76". Top and bottom felt equipment. 2 calenders, reel, winder, drives, prime mover, pumps, as last operated including four Vortraps, Jones Imperial Jordan, 3A Bird screen, Number 5 Bird Saveall, L 7 Nash pump, last producing about 16 to 18 tons of 20-60 lb. Bond. Machine can be inspected while operating.
72" trim Yankee Fourdrinier machine, speed 350-400 FPM, production four tons per 24 hours, 24 x 36, 10 lb./480 tissue. Fourdrinier Rice Barton, 5 ft. dryer, drum reel, Cameron slitter and winder, hoist, pumps, midget Jordan.
65" x 32 ft. 11" Fourdrinier paper machine, last producing 6 to 10 tons 80 lb. Bond, including Pony Jordan, suction couch, 3 presses, second press reverse. 1st dryer section 30 dryers 28" diameter, top and bottom felt equipment. Size press. 2nd dryer section 24" lead dryer, 6—36" x 62" dryers, top and bottom felt equipment. 5 roll calender, reel, Moore & White cutter, prime mover, Pony Jordan, 2 L-6 Nash pumps and other equipment as last operated. Machine can be inspected while operating.

WINDERS

30" Model B Fales slitter, new 1947.
42" Cameron, type 6
48" Kidder, Merchants Model, shear cut, new 1948
2—52" type 26 3-A Cameron duplex
48" Langston sheet type heavy duty slitter and winder
2—52" type 9 Camerons, water cooled unwind, spring operated tension roll, ten sets slitters, rebuilt
Langston 60" shear cut slitter
82" Langston Style B, drums 7½" x 82", rewind 36"
84" Pusey & Jones two drum, five sets shear cut slitters. Take roll 84", rewind 42" diameter.
98" face Pusey & Jones two drum.
108" type 18 Cameron, rewind 60", anti friction bearings, roll ejector, 40 HP 440 volt wound rotor motor
116" Warren winder with slitter attachment
Bcloit two drum winder, drums 15" x 128", anti friction bearing, shear cut, individual drum type drive.
132" Dominion, new 1947, rewind 40". 50 HP wound rotor motor.
146" Langston type DA, anti friction bearings, rewind 40"
154" Rice Barton two drum shear cut, drums 16"
158" Moore & White four drum, 15" dia. drums, rewind 40", shear cut slitter
160" type 18 Cameron, rewind 42". Air operated slitters. Water cooled unwind, constant tension unit.
186" type 19 Cameron
220" type 20 Cameron

TRIMMERS

84" Seybold precision, new knife
84" 20th Century, 10 Hp motor, rebuilt
1—64" 20th Century
2—64" Seybold Dayton
60" Sheridan
52" Lawson, new 1952

SHEET CUTTERS

140" Hamblet duplex Model 29, anti friction bearings, with backstand, new 1937
140" Hamblet single
108" Moore & White cutter and layboy, rebuilt
90" Hamblet duplex with layboy and 10 roll backstand
88" Hamblet
88" Moore & White with layboy
76" Moore & White
64" Moore & White
56" Moore & White with layboy
32" Hamblet with four roll backstand, lay off table

CALENDERS

5 roll 144" box frame, water cooled bearings
2—126" 7 roll, box frame, water cooled bearings
1—106" 9 roll Lobdell, water cooled bearings, box frame
2—9 roll Sandy Hill 106", spare set of rolls, spare bearings
5 roll 100", rolls about 15" diameter
9 roll 92"
4 roll 76"
6 roll 72"

SUPERCALENDERS

145" anti friction 9 Roll MG set available
2—100" 9 Roll Holyoke 26" Bot. Roll
1—9 Roll 66"
1—8 Roll 40"

SCREENS (FLAT)

6 Impco 14 plate, bronze vat
20 Impco 12 plate, bronze vat

SCREENS (ROTARY)

2—3A Bird, new 1950, bronze plates cut .016", semi non ferrous
2—3A Bird, totally non ferrous, bronze plates cut .016", 440 volt motor.
Jones Leith Walk screens, cut .012" plates, copper lined vat, spare parts
2—2A Bird, copper vat, 100" plates
2—2A Bird, 70", bronze plates, cut .016", totally non ferrous
1—3A Bird, 70"

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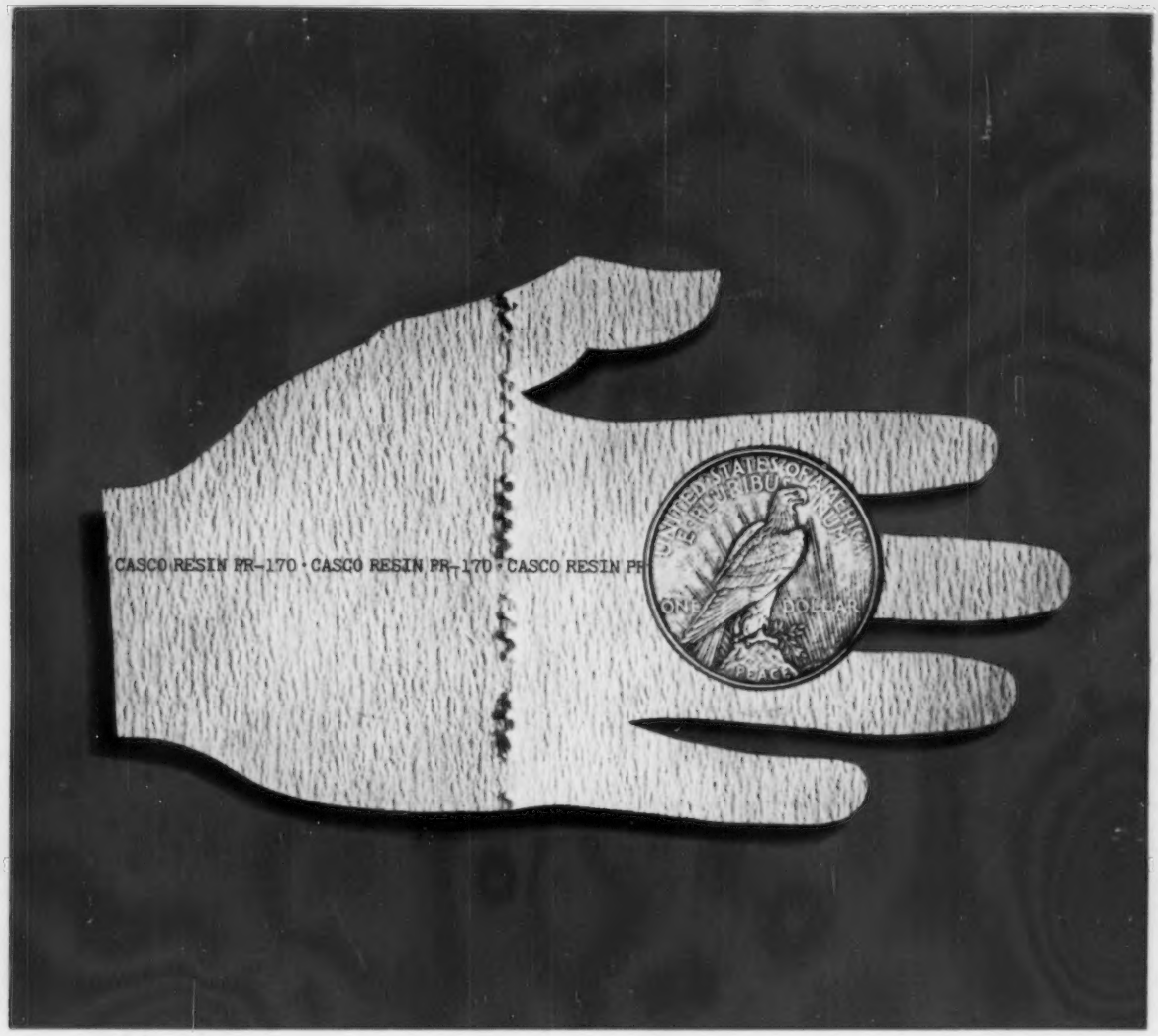

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